Volume 46 Title-page and Index Issued June, 1968

Review of applied mycology

GENERAL INDEX

Review Articles

select bibliography of plant pathology, parts I and II: 1–7; 113–120.
HOROLD, C. A., Black-pod disease of Theobroma cacao: 225–237.
YKHUIS, J. T., Virus diseases of cereals: 401–429.
AYCHAUDHURI, S. P., Development of mycological and plant pathological research, education, and extension work in India: 577–583.

This is basically a host-pathogen index. Entries are analysed under the host; abstract numbers ly are given under the pathogen.

New records are indicated by an asterisk *.

rdisan against *Corticium solani* on potato, 1176h.
AB, see 2-aminobutane.
baca, see *Musa textilis*.
bavit B5 as seed treatment for cotton, 129.
neu as seed treatment for barley, 3072.
bies, Fomes annosus on, in U.S.S.R., 453, 766; factors affecting duration and intensity of sporulation of, viability of, 766.
—, — *hartigii* on, in U.S.S.R., 453.
—, (?)*Leucostoma kunzei* on, in Czechoslovakia, 454.
—, *Melampsorella caryophyllacearum* and *Pholiota adiposa* on, in U.S.S.R., 453.
—, *Phoma abietis, Phomopsis abietina*, and *Stichophoma* on, in Czechoslovakia, 454.
— *amabilis, Nectria fuckeliana* on, in Canada, 158f.
— *balsamea, Bifusella faullii* on, in Canada, 158a.
— —, *Botrytis cinerea* on, in Canada, 1128.
— —, *Cylindrocarpon* on, in Canada, (?) imperfect state of *Nectria cucurbitula* var. *macrospora*, 765.
— —, *Dermea balsamea* on, in Canada, ?other organisms associated with, 158a.
— —, *Odontia bicolor* and *Polyporus balsameus* on, causing butt rot, 158b.
— —, *Pucciniastrum epilobii* on, in Canada, 158c.
— —, *Retinocyclus abietis* on, in Canada, 3582.
— *gracilis, Polyporus sulphureus* on, in U.S.S.R., 2527.
— *grandis, Nectria fuckeliana* on, in Canada, 158f.
— — stem crack, factors affecting, 2108; losses caused by, 440.
— *pindrow, Cenococcum graniforme* on, forming mycorrhiza in India, 1440.
— *religiosa, Cenococcum graniforme* on, forming mycorrhiza in Mexico, 37.
lbsidia glauca, effect of volatile metabolites from, on gametophytes of *Pteridium aquilinum*, 3347.
lbutilon mosaic virus in U.S.A., *Malvastrum coromandelium* yellow vein mosaic virus (?)str. of, 76.
— *theophrasti, Verticillium alboatrum* on, 2792.
lcacia, Trichocladia robiniae on, in U.S.S.R., 1337.
— *mucronata* cankers, Sphaeriaceae associated with, 1339.
lcalypha, Cercospora on, in Singapore, 1223.
Acer, diseases and disorders of, in Canada, popular circular on, 159.
—, *Gloeosporium apocryptum* on, in Canada, 158a.
— ribbon pattern virus on *Acer* in Europe, 442.
—, *Uncinula aceris* on, in Finland, 917.
—, — *bicornis* on, in U.S.S.R., 1337.
—, *Verticillium* on, 2623.
*— *negundo, Phyllosticta negundinis* on, in Czechoslovakia, 3355.
— *platanoides, Aspergillus fumigatus* and *Gliocladium roseum* in rhizosphere of, antagonism of to *Verticillium dahliae*, 2623.
— —, *Laburnum* mosaic virus can infect, 754.
— —, *Penicillium funiculosum* and *Trichoderma viride* in rhizosphere of, antagonism of to *Verticillium dahliae*, 2623.
— —, *Valsa* on, in U.S.S.R., 2318.
— —, *Verticillium alboatrum* on, in Yugoslavia, 2317.
— *pseudoplatanus, Botryodiplodia theobromae* on, infection by, 13f.
— —, differential resistance of cell walls of to polysaccharide degrading enzymes from *Colletotrichum lindemuthianum*, 2988.
— —, *Verticillium alboatrum* on, in Yugoslavia, 2317.
— *rubrum, Eutypella parasitica* can infect, 13h.
— —, *Nectria galligena* on, in U.S.A., 2531.
— *saccharum* canker in U.S.A., (?)*Fusarium solani* causing, 444.
— — decline, effect of watering on, 2600f.
— —, *Eutypella parasitica* on, 13h.
— — mycorrhiza, development and growth of, 537.
— — sunscald canker in U.S.A., fungi and insects associated with, 3634m.
Aceria tulipae, detection of wheat viruses in, 2161b.
— —, localization of wheat streak mosaic virus in, 3396.
— — not transmitting *Agropyron* and *Hordeum* mosaic viruses, 289.
— — transmitting wheat streak mosaic virus, 924.
— —, wheat streak mosaic virus can infect, 1525.
Acetic acid, effect of, on spore germination of *Urocystis cepulae*, 3290.
Achatina fulica transmitting *Phytophthora*, 2358a, 3159.
Achlya, effect of volatile metabolites from, on gametophytes of *Pteridium aquilinum*, 3347.

Acremoniella atra on beet seed, 786.
Acrogenotheca ornata sp.nov., description of, 1228b.
Actidione against *Cunninghamella* on pumpkin, 819; damping-off of pea, 480; *Hemileia vastatrix* on coffee, 2728; *Plasmopara viticola* on vine, 1841.
—, effect of on *Ceratocystis fagacearum* on oak, 756; *Colletotrichum lindemuthianum* on *Phaseolus*, 533; *Cronartium fusiforme* on pine, 2121.
—, non-inhibition of fungi on pine by, 769.
—, production of by *Streptomyces* strs. B. 64, B. 81, and B. 128, 533.
—, toxicity of to coffee, 2728; pea, 480; pumpkin, 819.
Actinomycetales, keys to, 1230.
Actinomycetes against *Pythium arrhenomanes* on maize and sugarcane, 83.
—, antagonism of to *Fusarium culmorum* on tomato, 61c.
—, biology of, 565.
—, effect of mycorrhiza of *Tricholoma matsutake* on, 1439.
— in Poland, 3005.
— in rhizosphere of carrot and tomato, 61b.
— in soil, 821; in S. India, book on, 2391.
—, production of tetraene antibiotics Nos. 18–45 and 18–80 by, 631.
—, technique for preserving cultures of, 1491.
Actinomycin D, inhibition of incorporation of RNA precursors in healthy and virus-infected leaves by, 3702.
— —, similarity in symptoms produced by tobacco mosaic virus and, 3192.
Acylphenylhydrazine derivatives against *Pyricularia oryzae*, 3423b.
Acyrthosiphon onobrychis transmitting bean yellow mosaic virus, 2138.
— *pisum*, tests for determining suitability of, for transmitting pea enation mosaic virus, 75b.
— — transmitting pea enation mosaic virus, 1143, 1501; pea leaf roll virus, 1789.
Adansonia digitata, cacao mottle leaf virus on, in Ghana, 85b, 1952.
**Adonis vernalis*, *Sphaerotheca fuliginea* on, in Poland, 1604.
**Aecidium graveolens* on barberry, 559.
— *punctatum* not significant in development cycle of *Taphrina pruni-spinosae*, 1662.
Aerobacter aerogenes in cotton bolls, 636.
— *cloacae* on tomato, 1742.
Aflatoxin, production of by *Aspergillus flavus*, 1455.
Agallia constricta transmitting clover big vein virus, 3377, 3708.
— *quadripunctata*, aster yellows virus in detection and multiplication of, 2658.
Agaricus, see Mushroom.
Agathis australis, *Endogone* on, forming mycorrhiza, effect of on phosphate uptake, 2379.
— —, (?)*Fomes annosus* on, in New Zealand, 1349.
Agave sisalana, see Sisal.
Agricultural chemicals, annual list of approved, 1864; application precautions for, 527.
Agrimycin 17 in combination against *Pseudomonas syringae* on cherry, 1045.
Agrobacterium radiobacter, physical and physiological methods of differentiating among *A. rhizogenes*, *A. tumefaciens* and, 3647.
[*Agrobacterium*] *rhizogenes* on bean, 2948b.
— —, physical and physiological methods differentiating among *A. radiobacter*, *tumefaciens* and, 3647.
— *rubi* on bean, 2948b.
— *tumefaciens*, degradation of D-lysopine 3323.
— —, effect of DCTFA on, 3653.
— —, electron microscope and serologi studies of phages of, 1186.
— —, hosts of, 1185, 1186.
— — in soil, 2366.
— —, inhibition of by streptocycline, 1197.
— — on bean, 1417, 2167a, 2948a,b, 3322.
— — on *Datura stramonium*, 1231h, 14 3324b,c.
— — on *Helianthus tuberosus*, 1189, 1860.
— — on hops, 3033.
— — on *Kalanchoë*, 2167a,b.
*— — on *Passiflora coerulea*, 1511.
— — on pea, 3324a.
— — on peach, 1295.
— — on *Pelargonium*, 1622.
— — on radish, 2177.
*— — on rose, 1511.
— — on Solanaceae, 1231h.
— — on tobacco, 1187.
— — on tomato, 1861, 3646.
— — on *Vaccinium*, 1046.
— — on vine, 1188.
— —, physical and physiological method differentiating among *A. radiobacter*, *rhizogenes* and, 3647.
— —, physiological properties of strs. of, 8
— —, tumour-inducing principles of, 850.
Agronal against *Cryptodiaporthe populea* poplar, 2841.
— as seed treatment for barley, 961, 2697, 30
—, effect of on growth of bacteria and fun 2965.
Agropyron, *Bromus* mosaic virus on, in Yu slavia, 2049.
— mosaic virus on *Agropyron*, detection of mites, 2161b.
— — — on *A. repens* and wheat, 289.
— *repens*, *Agropyron* mosaic virus on, 289.
— — as source of infection for *Pucci graminis* f.sp. *secalis* on rye, 1515.
— —, *Bromus* mosaic virus on, in Yugoslav hosts, identification and properties of, 27
— *trachycaulum*, *Hordeum* mosaic virus on Canada, reservoir of infection for, 1626.
Agrosan against *Cercospora jasminicola* jasmine, 3465.
— as seed treatment for plants, 2606.
— 5W as seed treatment for cotton, 129, 27
— —, effect of on viability of barley and wh seed, 3066.
— GN as seed treatment for barley, 1987; 998.
— —, effect of on viability of wheat seed, 30
Agrostis, *Sclerotinia homoeocarpa* on, cont 12y.
— *palustris*, *Corticium solani* on, fact affecting, 1630.
— —, *Pythium aphanidermatum* on, infection primary roots by zoospores of, 2050.
— —, *Sclerotinia homoeocarpa* on, control var. react. to, 1284.
— —, *Ustilago striiformis* on, control, 2251.
— *tenuis*, *Ophiobolus graminis* on, in New Wales, *2942; control, 1632.

Agrostis tenuis], *Pythium ultimum* on, factors affecting, 1630.
— —, *Sclerotinia homoeocarpa* on, 1284.
ir, *Epicoccum* in, over maize field, diurnal periodicity and violent liberation of spores of, 115.
-, *Erysiphe graminis* in, in England, 2160j.
-, (?)*Fistulina hepatica* in, in mines, 2543.
-, fluorine in, accumulation of by plants, 36.
-, fungi in, in storerooms of libraries and museums in Poland, 35.
- pollution, in the Netherlands, 2178; causing leaf roll necrosis of lilac, 1616; plant protection and, review of, 1199; review of problem of, 2178.
-, *Polyporus zonalis* and *Poria monticola* in, in mines, 2543.
-, *Pseudoperonospora humuli* and *Sphaerotheca macularis* in, over hop fields, diurnal and seasonal fluctuations in, 3523.
- spora over rice fields in India, 606.
-, *Trichometasphaeria turcica* in, diurnal periodicity of, 114.
-, *Ustilago cynodontis* in, over grass in Morocco, density of, 2252.
Aircraft, apparatus for spore sampling in, 121.
- for spraying, 2m, 694, 709, 788, 1780, 2060, 2964, 2967.
- spraying versus air-blast spraying, 327.
DL-alanine, effect of on multiplication of tobacco mosiac virus on tobacco, 1727.
Alar against *Xanthomonas vesicatoria* on *Capsicum*, 1832.
—, interaction of with peach virus disease, 2069.
- in combination against *Xanthomonas vesicatoria* on *Capsicum*, 1832.
Albizia julibrissin, *Corticium galactinum* not infecting, 2834.
— —, *Fusarium oxysporum* f.sp. *perniciosum* on, 1748.
— —, *Ganoderma lucidum* on, in U.S.A., 1108.
— *moluccana* die-back, effect of lopping on, (?)*Phoma* causing, 1718d.
Albugo candida on radish, 468.
— *tragopogonis* on *Scorzonera hispanica*, 1900.
Alder (*Alnus*), ascomycetes and fungi imperfecti on, in Rumania, 2528.
*—, *Phyllosticta alnigena* on, in Czechoslovakia, 3355.
—, *Taphrina epiphylla* and *T. sadebeckii* on, effect of interaction of indoleacetic acid and phenol compounds on, 1902.
Aldrin, constituent of semex, 2710.
Aleurites fordii, *Mycosphaerella aleuritidis* on, evaluation of fungicides against, 701.
Aleurolobus barodensis, *Aschersonia placenta* on, in India, 1426.
Algae against plant pathogens, 2595d.
Alkylphenols, toxicity of, to *Pyricularia oryzae*, 3329.
Allium, *Sclerotium cepivorum* on, germination of sclerotia of, 3609; in soil, 491.
— *alataviense* and *A. albidum*, *Peronospora destructor* on, 208.
— *ascalonicum*, see Shallot.
— *cepa*, see Onion.
— *flavum*, *A. galanthum*, and *A. ochroleucum*, *Peronospora destructor* on, 208.
— *porrum*, see Leek.
— *sativum*, see Garlic.
— *tuberosum*, *Peronospora destructor* on, 208.
Allyl alcohol against cucumber root rots, 842a.
— — in combination against *Fusarium oxysporum* f.sp. *lycopersici* on tomato, 156.
Almond (*Prunus amygdalus*), *Blumeriella jaapii* on, in Hungary, overwintering of, 375.
*—, *Botrytis cinerea*, on, in Italy, symptoms of, 691.
— ' mosaic ' virus on almond in Italy, effect of hot air and hot water treatment on, 2276.
*—, *Phytophthora cactorum* on, in Chile, symptoms of, 1299.
—, *Sclerotinia laxa* on, control, 3506.
*—, — *sclerotiorum* on, in Italy, symptoms of, 691.
— yellow vein virus on almond in India, 671.
Alnus, see Alder.
Alopecurus carolinianus, (?)maize dwarf mosaic virus on, in U.S.A., 2006.
Alsike, see Clover.
Alternaria, comparison of type species of, 2394.
—, key for determination of, 2190.
— *brassicae* on kale, 2594g.
— — on yellow mustard, 1774.
— *brassicicola*, evaluation of fungitoxicity of cycloheximide to, 3328.
— — on cabbage, 783.
— — on kale, 2594g.
*— — on turnip, 512a.
— *chartarum* on citrus, 2232.
— *chrysanthemi* on *Chrysanthemum maximum*, 343.
— *citri* on calamondin, 999.
— — on citrus, 1449, 3440.
— — on orange, 999.
— *consortiale* on beet seed, 786.
— — on citrus, 2232.
— *crassa* on *Datura*, 3014.
— *cucumerina*, asexual nuclear behaviour of, 1924.
— — on melon, 1819.
— *dauci* on carrot, 82, 493.
— — f.sp. *endiviae* on chicory and endive, 1812.
— *dianthi*, effect of orthocide and polyram combi on, 3651.
*— *dianthicola* on carnation, 2243.
— *geophila* on grapes, 836.
*—*hibisci* on *Hibiscus esculentus*, 265,
— *kikuchiana* on pear, 11e.
— *lini* on linseed, 1598.
— *longipes* on tobacco, 1327, *2103.
*— *macrospora* on cotton, 2734.
— *nyctanthi*, chemical requirements for growth and sporulation of, 1454.
*— *passiflorae* on *Passiflora*, 3384.
— *pluriseptata* on cucumber, 1167.
— *porri* on *Olea welwitschii*, 2529.
— — on onion, 206.
*— *senecionis* on *Senecio cruentus*, 2244.
— *sesami*, associated with *Cylindrosporium sesami* on sesame, 1844d.
— *solani*, effect of light on sporulation of, 2386.
— — on eggplant, 1923.
— — on potato, see Potato.
— — on tomato, see Tomato.
— —, similarity of *Septoria* on potato to, 3547.
— —, utilization of oligosaccharides by, 251.
*— *tamijiana* on rose, 138.
— *tenuis*, binding and uptake of dodine acetate by conidia of, 855.
— —, decomposition of methyl cellulose by, 551.
— —, effect of aromatic polysulphides on, 1872; chemicals on activity and secretion of

pectic enzymes produced by, 2986; light on sporulation of, 12b; low temperatures on mycelial growth and sporulation of, 247; phelam DP on, 2172.
[*Alternaria tenuis*], inhibiting seed germination, 1857.
— — on apple, 1449.
— — on bean, 871.
— — on beet seed, 786.
— — on citrus, 2232.
— — on clover seed, 2765.
— — on cotton, 860.
— — on cucumber, 2985.
— — on *Eucalyptus*, 3033.
— — on *Fuchsia*, 3460a.
— — on lucerne seed, 2765.
— — on maize, 2706.
— — on orange, 2233.
— — on potato, 2498.
— — on rice, 3416b.
*— — on tobacco, 3199.
*— — on tomato, see Tomato.
— — on wheat, 1973.
— —, toxicity of aromatic and heterocyclic derivatives to, 1871b; of coke chemical raw material to, 532; of dithiocarbamate derivatives to, 1875.
— *tenuissima* on *Bougainvillea glabra*, 267.
— — on citrus, 2232.
— — on *Olea welwitschii*, 2529.
— — on *Polyalthia longifolia*, 355.
— — on wheat, 951.
— *trop.eoli*, chemical requirements for growth and sporulation of, 1454.
— *umbellifericola*, comparison of with *Alternaria poonensis* on coriander and other Umbelliferae, hosts of, 1305.
— *vitis* on vine, 2587.
Althaea rosea, see Hollyhock.
Aluminium, effect of on *Fusarium martii* var. *pisi* on pea, 1379.
— alloys, microbiological corrosion of, 3337c.
Alysicarpus longifolius, groundnut bunchy top, chlorosis, and ring mottle viruses on, 1388.
Amanita muscaria on *Liquidambar styraciflua* forming mycorrhiza, 1891.
— *rubescens* on pine forming ectotrophic mycorrhiza, 170.
Amanitopsis vaginata on *Liquidambar styraciflua* forming mycorrhiza, 1891.
Amaranthus, potato virus X on, in U.S.S.R., 404.
— *aureus* and *A. speciosus*, beet yellows virus on, in Poland, 2553.
— *tricolor*, *Alternaria* on, changes in amino-acid content of leaves of, 2439.
AMB, effect of on *Plasmodiophora brassicae* and *Rhizoctonia aderholdii* on cabbage, 573b.
Amino acids, effect of on sexual reproduction of *Phytophthora* and *Pythium*, 2181; zoospores of *Phytophthora cinnamomi*, *P. citrophthora*, and *P. palmivora*, 12e.
2-aminobutane against citrus fruit decay, 617; *Colletotrichum musae* on banana, 3147; *Penicillium expansum* on apple, 1036.
— injury to banana, 3147.
— versus thiabendazole, 1579.
— in combination against citrus fruit decay, 617.
— acetate against citrus fruit decay, 617.
— carbonate against *Botrytis* on orchid, 2945f; citrus fruit decay, 617.
— chloride and sulphate against *Penicillium digitatum* and *P. italicum* on orange, 3102.
DL-β-aminobutyric acid against *Aphanomy euteiches* on pea, 1792.
Ammonia, effect of on *Sclerotium rolfsii*, 2
Ammoniated latex, use of, as sticker on *Hi* rubber, 1089e.
Ammonium chloride, effect of on physio and reaction of maize to *Diplodia ma* 604.
— compounds, quaternary, as timber pre tives, 3250.
— humate, effect of on release of methyli ocyanate from fungicide treated soil, 29
— molybdate as seed treatment for co 2031; wheat, 2416.
— nitrate, against *Sclerotinia homoeocarpa Agrostis*, 12y.
— sulphate against *Ophiobolus graminis avenae* on *Agrostis tenuis*, 1632; tea yello 2943a.
— —, effect of on *Corticium solani* on to 436a.
— tartrate, effect of on growth and sporu of *Chaetomium globosum*, 46b.
Amobam against *Erysiphe polygoni* o 2880.
Amoeba albida, antagonism of in so *Verticillium dahliae* on cotton, 2236.
Amoebae as seed treatment for cotton, 22
—, effect of on *Fusarium oxysporum vasinfectum* and *Verticillium dahliae* cotton, 632.
Amphimallon solstitiale, *Beauveria bass* and *Melanospora parasitica* on, in U.S. 2170.
Amphorophora rubi transmitting rasp mosaic virus, 2284b.
Anacardium occidentale, *Glomerella cing* on, in India, 3519.
Anaerobic seed treatment for barley, 15
Ananas comosus, see Pineapple.
Anchusa officinalis, tobacco mosaic virus on, in Czechoslovakia, 1605.
Anemone ranunculoides, *Tranzschelia p spinosae* on, in Yugoslavia, aecial stat 1662.
Anethum graveolens, see Dill.
Angiosperms, analysis of rhizosphere flor 50.
**Angraecum veitchii*, *Cercospora angraeci* in U.S.A., 3635a.
Anise (*Pimpinella anisum*), *Puccinia pimpi* on, in Argentina, 3033.
**Anogeissus latifolia*, *Leptosphaeria c thyrium* on, in India, 267.
Anthoxanthum mosaic virus, resemblanc particles of to *Dactylis glomerata* st virus, transmission of to Gramin 3310d.
— — — on *A. odoratum* and cereals, 331
— *odoratum*, *A.* mosaic virus on, not affe growth and yield, 3310d.
Anthriscus sylvestris, *Anthriscus* yellows on, transmission of by vectors, 3311g.
— —, parsnip mosaic and parsnip yellow viruses on, 3311g.
Anthurium andreanum, *Septoria anthurii* o Denmark, 510a.
— — virus disease, hosts of, transmission (?) grafting and vectors, 1854c.
— *scherzerianum*, *Septoria anthurii* on Denmark, 510a.
**Anthyllis vulneraria*, pea mosaic virus o Czechoslovakia, 1940.

ibiotics, action of, 3337b.
use of in plant pathology, 3332.
quinone, classification of, production of by tinomycetes, 2974; by fungi, 863.
imicrobial agents and chemotherapy, .
imony salt, effect of on *Puccinia graminis* n wheat, 3049.
imucin WBR against *Marasmius palmivorus* n oil palm, 2297.
–, inhibition of *Curvularia eragrostidis*, *anoderma zonatum*, and *Marasmius palmi-rus* by, 3536.
rrhinum, *Pseudomonas fluorescens* on, in ueensland, new var. of designated var. *itirrhinastri*, 2440.
Puccinia antirrhini on, in Finland, 1508; enetration by, 2742.
Verticillium albo-atrum on, 332.
racol against *Peronospora tabacina*, 2519.
raphis maidiradicus transmitting maize warf mosaic virus, 3081.
anomyces cochlioides on beet, see Beet.
euteiches, factors affecting growth and evelopment of, 188.
– on pea, see Pea.
elenchoides, effect of on growth of *Boletus ranulatus* and *Mycelium radicis atrovirens*, 980.
elenchus avenae, studies on pathogenicity of n fungi, 2524.
nids, associated with *Musa textilis* mosaic irus, 1600.
transmitting bean common mosaic virus, 657; cucumber mosaic virus, 1500; currant irus diseases, 2282; oak virus diseases, 447; apaw viruses, 1055; plant virus diseases, 356, 2656; potato virus diseases, 1311; otato virus Y, 2798; western celery mosaic irus, 2912.
Zoophthora phalloides on, in Poland, previously identified as *Entomophthora occi-entalis*, 1428.
iis craccivora transmitting broad bean nosaic virus, 3278; cowpea mosaic virus, 602; groundnut chlorosis virus, 1388; roundnut rosette virus, 805, 1157; pea leaf oll virus, 1789; *Ranunculus* mottle virus, 044; *Robinia* mosaic virus, 1346; subter-anean clover stunt virus, 790; *Tylophora* nosaic virus, 3532.
fabae transmitting bean yellow mosaic virus, 04, 2138; beet yellows virus, 2552, 2553; ucumber mosaic virus, 1823; hop virus, 97; pea leaf roll virus, 1789; turnip mosaic irus, 3302.
(?)*glycines* transmitting *Musa textilis* mosaic irus, 2436.
gossypii transmitting citrus tristeza virus, 100; groundnut rosette virus, 1157; maize lwarf mosaic virus, 3081; *Petunia* mosaic lisease, 3467; *Ranunculus* mottle virus, 2044; *Tylophora indica* mosaic virus, 3532.
laburni transmitting virus disease of *Vigna inensis* × *V. sesquipedalis*, 2h.
pomi transmitting cucumber mosaic virus, 1204.
sambuci transmitting plant viruses, 1933.
hrodes bicinctus (?) transmitting clover hyllody virus, 2659.
ium graveolens, see Celery.
lanobacter populi on poplar, 162a, 440, 1754, 2108, 2843.
Apparatus [see also Technique and Spraying apparatus] for collecting spores, 274, 2644, 2645; concentrating tobacco mosaic virus suspensions, 1326; containing fungi and disease specimens in the herbarium, 276; controlling *Ustilago nuda* on barley, 3070; detecting *Gloeotinia temulenta* on *Lolium perenne*, 1487; distinguishing different types of fungal mycelium and bacteria, 2399; holding Ryan growth tubes, 69; hot water treatment of barley seed, 2698; isolating spores of *Cercospora beticola*, 2874; maintaining constant temperature for pot-grown plants, 2197; measuring effects of volatile fungal metabolites on growth and reproduction of fungi, 49; rate of growth of fungi on timber, 173c; photometrical expression of the tactic aggregation of zoospores, 2648; plant protection, 2m; in Germany, 1430; producing zoospores, 3012; rainmaking for study of fungicide tenacity on cacao leaves, 3040; recording of effective temperature aggregates, 2398; sampling spores, 905; separating *Ustilago hordei* from barley seed, 594; spore sampling in aircraft, 121, 2643; studying antipodally inoculated cultures, 1927; behaviour of soil fungi, 3011; effect of humidity variations on *Peronospora tabacina* on tobacco, 2105a; surveying periodicity of spore discharge in Pyrenomycetes, 1215; testing potato leaf roll virus, 3175; trapping spores, 606; warning against *Plasmopara viticola*, 1488; washing fungi from soil, 1216.
Apple (*Malus pumila*), *Alternaria tenuis* on, protease activity in, 1449.
— as indicator for beech virus, 510c.
—, basidiomycete root canker of, causing 'Moutere die-back,' 678.
— bitter pit, relationship of to calcium level, 1653.
—, *Botryosphaeria ribis* on, in U.S.A., 3496; development of, 3316b; factors affecting resistance to, 1651; protease activity in, 1449.
— breakdown in storage, effect of hot water treatment on, 3135; relationship of, to weight lost, 1654.
— canker disease in Guatemala, resemblance of to blister bark disease, 681.
— chlorotic leaf spot virus on apple in U.S.A., 2772; non-transmission of in seed of Columbia Crab, 3487; similarity of pear vein yellows and pear green ring mosaic viruses to, 2268; summer indexing of stored indicator buds of, 3485.
— — — — — on cherry, 1644a.
— — — — — on peach, 2354i.
— — — — — on pear, 1293.
— coreflush, effect of hot water treatment on, 3135.
—, *Coryneum foliicola* on, germination of conidia of, 1291.
— cracking, review of world literature on, 2266.
— dapple apple virus on apple, effect of, on, 2261.
—, *Diplodia* on stored, differentiation of from *D. natalensis*, 3498.
— diseases in Brazil, report on control of, 2056; table of fungicides against, 2171.
*—, (?)*Elsinoe piri* on, in New S. Wales, 1944.
—, *Erwinia amylovora* on, in *Canada, 1658, 3384; *Poland, 1041; effect of avirulent strs. of on, 520, 1656, 1657; of night applications

of streptomycin on, 3499; of virulent strs. of on, 1657.
[Apple] flat apple disease, apple red ring disease distinct from, 2262; transmission of by grafting, 2772.
—, *Gloeodes pomigena* on, in New Zealand, control, 1033.
—, *Gloeosporium* on, in England, 2354e; Finland, 3314.
—, *Glomerella cingulata* on, in New Zealand, 1033; control, 1033, 1652; designated *Colletotrichum gloeosporioides* var. *minor*, 370; effect of air washing on growth of, 679; lenticel infection of, 3497.
— green crinkle virus on apple in Poland, 1644b.
—, *Gymnosporangium clavipes* on, var. react. to, 2458.
—, *Helicobasidium mompa* on, control and factors affecting, 3127.
— latent virus on apple in Poland, 1644b.
— — — 2 identical with sowbane mosaic virus, 3022.
— — viruses on apple, differentiation of and non-transmission of, by seed, 371.
— leaf pucker virus on apple in India, 671.
*— little leaf virus on apple in India, symptoms of and transmission of by grafting, 671.
—, manganese toxicity in, in Greece, 1911.
—, mercury residues in, factors affecting, 2462.
— micro-organisms on, inhibition of *Venturia inaequalis* by, 2354b.
— mosaic virus on apple in Poland, 1644b; purification of, 2259; relationship of to *Prunus* necrotic ring spot virus, 2259, 2354h; serology of, 3634c; var. react. to, 1492c.
— mycoflora in Lithuanian S.S.R., 1849d.
—, *Nectria galligena* on, in U.S.A., 2265; U.S.S.R., 1513q; adaptation of control to changes in distribution of, 2369l; control, 2369a; hypersensitive reaction to, 3630c; inhibition of by antifungal substance, 3630c; lenticel infection by, 3497; perfect state of, 2265.
—, pear stony pit virus can infect, 2161h.
—, *Penicillium* on, effect of heat treatment on, 3134.
—, — *expansum* on, production of pectolytic enzymes by, 1213.
—, — — on stored, control, 1036.
—, *Pezicula* on, control, 232c, 3134.
—, — *alba* on, 2058c; in France, 2058a; control, 1652, 2058a; lenticel infection by, 3497; storage practice in relation to, 2058b; survival of, 232c.
—, — *malicorticis* on, in Germany, 1035; U.S.S.R., 1513q; control, 1652; factors affecting, 1035; inhibition of by diphenylamine, dodine and ethoxyquin, 1034; lenticel infection by, 3497; preliminary screening trials of spore suppressants of, 3133; spread of, 1035.
—, *Phialophora malorum* on, in U.S.A., first record of in Pennsylvania, 680.
—, *Physalospora obtusa* on, in U.S.S.R., 1513q; control, 2173; problems of immunity from, 3386.
— physiological spotting in Finland, 3314.
—, *Phytophthora cactorum* on, in Canada, 1647; effect of air washing on growth of, 679.
—, — *cambivora*, *P. citricola*, and *P. megasperma* on, in Canada, 1647.
[Apple], *Podosphaera leucotricha* on, 165[illegible] Bulgaria, 3493; Canada, 3384; En[illegible] 3129; Norway, 1294; U.S.S.R., [illegible] 2940e, 3492; control, 232b, 374, 862,[illegible] 2264, 2459, 3129, 3492, 3493; in relat[illegible] *Cicinnobolus cesatii*, 842c; effect of rad[illegible] on susceptibility to, 1031; of, on *Ve*[illegible] *inaequalis*, 2263; incidence of, 2940e; [illegible] tial fungicides for, 3130.
— proliferation virus on apple in France var. react. to, 1492c.
—, *Prunus* necrotic ring spot virus on, in En[illegible] apple mosaic caused by strs. of, 2354[illegible]
—, *Pseudomonas* on, 2354b; in England, [illegible]
—, — *syringae* on, in Italy, 3501; P[illegible] 1176g; aetiology and control, 3501; f[illegible] affecting, 1176g; factors affecting inc[illegible] of, 3501; relationship of with *P.* [illegible] *prunorum*, 3501; symptoms of, 1176g; [illegible] of infection of, 3501.
— red ring disease on apple, 2772; app[illegible] ring virus suggested as name for, d[illegible] from apple flat apple disease, trans[illegible] of by grafting, 2262.
—, *Rhizopus arrhizus* on, in Pakistan, [illegible] associated with, 3132.
—, *Rosellinia necatrix* on, in India, [illegible] control and factors affecting, 3127.
— rubbery wood virus on apple in P[illegible] 1644b.
— russeting in New Zealand, 1033; co[illegible] 1033; factors affecting, 2266; physiol[illegible] 1037; review of world literature on, 2[illegible]
—, *Sclerotinia* on, control, 2460.
—, — *fructigena* on, in Germany, [illegible] antifungal phenolic acids in, 3494[illegible] proved extraction of polygalactu[illegible] from rotted tissue of, 3131; inciden[illegible] 1844; penetration by, 2457c.
—, — *mali* on, apothecial production [illegible] culture, 2773.
—, *Sclerotium rolfsii* on, control and eff[illegible] on yield, 676.
— ' small fruit ' in New Zealand, 142.
— stem cavity russet, occurrence of, 226[illegible]
— — grooving virus, distinct from stem [illegible] virus, properties of, transmission of [illegible] to *Chenopodium* and *Nicotiana glu*[illegible] 3488.
— — pitting virus, apple stem grooving[illegible] distinct from, 3488; not causing [illegible] mottle of peach, 2354i.
— — — — on apple in Poland, 1644b; U[illegible] 2772; effect of on growth and yield, [illegible] on tree vigour, 1646; natural spread of, [illegible] var. react. to, 1646, 2261.
—, *Stereum purpureum* on, 672.
— storage disorders, control, 1036, [illegible] effect of hot water treatment on, [illegible] factors affecting development of, 20[illegible]
— superficial scald, control, 1292; eff[illegible] DPA and ethoxyquin on, 1655.
—, tobacco mosaic virus on, transmiss[illegible] by seed, 2258.
—, *Venturia inaequalis* on, 230n; in C[illegible] 1180b; Egypt, 1648; England, 230m, 23[illegible] Finland, 3314; Germany, 6, 1844; [illegible] 1516, 3491; Latvian S.S.R., 1849p; N[illegible] Wales, 2357i; Poland, 373, 1176f,i,j,[illegible] U.S.S.R., 1513p; adaptation of to fung[illegible] 2461; aircraft spraying against, 206[illegible] chemical aspects of resistance to, [illegible] control, 230m, 231s, 232a, 373, 1032b,[illegible]

76f,j, 1180b, 1289, 1290, 1649, 2061, 2173, 63, 2354d, 2771, 2940e, 3129; of host sceptibility and solute transport by meta- lites of, 372; defence mechanisms in, 540; persal of ascospores of, 2357i; distribu- n of, 2597; effect of *Podosphaera leuco- cha* on, 2263; effect of on yield, 6; epide- ology of, 3491; factors affecting, 373, 80b, 1648, 3491; immunity from, 3387; nibition of by micro-organisms, 2354b; ethods of determining infection periods of, 32a; (?)new str. of, 1516; production ason for ascospores of, 675; redistribu- n of fungicides on by rainfall, 3128; le of extracellular melano-proteins of on sceptibility to, 3490; side effects of insec- ides on, 1648; translocation of fungicides relation to, 2263.
ole], *Verticillium alboatrum* on, in U.S.S.R., 7.
irus disease, effect of on trace element ntent, 3489.
- diseases in France, 234; economic portance of, 3018; properties of leaf oteins in relation to resistant and suscep- ble vars., 2057, 3486.
atercore breakdown, 3500.
witches' broom virus, historical account spread of, 2652a; legislation against in veden, 2377.
icot (*Prunus armeniaca*) ' apoplexy ', effect grafting on, 1661.
Blumeriella jaapii on, in Hungary, 375; atvian S.S.R., 1849c; overwintering of, 375.
hlorotic leaf roll in France, 234.
iseases, table of fungicides against, 2171.
Eutypa armeniacae on, popular account of ntrol and symptoms of, 2775.
ummosis virus, (?)str. of cherry necrotic ng spot or prune dwarf viruses, transmis- on of by seed, 1042.
Pseudomonas syringae on, in Poland, 76g; symptoms of, 1176g, 2273.
Sclerotinia fructicola on, in Japan, 2475.
— *laxa* on, var. react. to, 2277.
Sphaerotheca pannosa on, symptoms of, 273.
Stigmina carpophila on, in U.S.S.R., 1513r.
Venturia carpophila on, symptoms of, 2273.
Verticillium on, toxicity to, 2072.
— *alboatrum* on, effect of pigment from n, 10f; effect of wood tannins on resistance , 2473.
— *dahliae* on, effect of cultural methods on ntry of, 2071; isolation of, from buds and edicels, 1660.
bis mosaic virus, electrophoretic investig- tion on, 1837.
— —, transmission of, by seed, 1498; ectors, 2592j.
— — on celery, 2594d.
— — on *Chenopodium amaranticolor*, 2932.
— — on cherry, 380.
— — on clover, 360, 1634.
— — on currant, 2282.
— — — on *Forsythia intermedia*, 1511.
— — on lettuce, 2915.
— — on *Narcissus*, 1278.
— — on *Petunia*, 2654.
— — on raspberry, 1499.
— — on rhubarb, 3302.
— — on rose, 1499.
— — on strawberry, 2354k, *3144.
[*Arabis* mosaic virus] on vine, 833, 1398.
— — —, *Robinia* mosaic virus not related to, 1346.
— — + tomato black ring viruses on vine, 833.
— — + vine fanleaf viruses on vine, 833.
— — virus str. on *Forsythia*, 77.
Araceae, *Pseudomonas cichorii* on, control, 3116.
**Arachis* leaf scorch in Argentina, *Lepto- sphaerulina arachidicola* and other fungi causing, 806.
—, *Mycosphaerella arachidicola* on, specific reaction to, 2904.
— *glabrata* and *A. hagenbeckii*, *Mycosphae- rella* on, immunity to, 1387b.
— *hypogaea*, see Groundnut.
— *monticola*, groundnut ringspot virus on, symptoms of, 1389a.
— *repens*, *Mycosphaerella* on, immunity to, 1387b.
Arasan as seed treatment for cabbage, 782.
— 50W against groundnut collar rot, 1386a.
— 75 against *Phytophthora nicotianae* var. *parasitica* on citrus, 3434.
Araucaria brasiliana, *Nodulosphaeria arau- cariae* on needles of, in Japan, 2325.
— *cunninghamii*, *Botryodiplodia theobromae* on, in Malaya, 767.
— —, *Fomes annosus* on, in Queensland, 1349; (?)identical with European forms, 1349; (?)related to fungus on *Agathis australis* in New Zealand, 1349.
Arbrex 805 as wound dressing, 672.
Arbutus andrachne, *Capnodium* on, in U.S.S.R., 645.
— — disease in U.S.S.R., 645.
— *unedo*, *Septoria unedonis* on, in U.S.S.R., 645.
Arceuthobium campylopodum f.sp. *campylopo- dum* on pine, *Glomerella cingulata* parasitiz- ing, 2164.
Areca catechu, see Areca palm.
Areca palm (*Areca catechu*) yellow leaf disease, (?)*Stachytarpheta indica* as inoculum reser- voir for, 712.
Aretan against *Ceratocystis paradoxa* on sugar- cane, 1710d.
— versus elcide 73, 1710d.
Argyroploce moth associated with *Penicillium digitatum* on citrus, 3441.
Armillaria matsutake, effect of nutrient solu- tion on growth of mycelia of, 1834.
— *mellea*, effect of *Aureobasidium pullulans* on growth of, 2161a; cultural conditions of *Trichoderma viride* on antagonism of, to, 3334.
— —, leaflet on, 3213.
— —, mitotic apparatus in rhizomorph meri- stem of, 2636.
— — on aspen, 3214.
(?)— — on banana, 1674.
— — on birch, 3214.
— — on coffee, 329.
— — on *Diervilla florida*, 643.
— — on *Liriodendron tulipifera*, 445.
— — on oak, 2836.
— — on oriental beech, 751.
— — on pine, see Pine.
— — on pome fruit, 2775.
— — on *Rhododendron*, 660.
— — on spruce, 158b.
— — on stone fruit, 2775.
— — on teak, 1348.

[*Armillaria mellea*], on *Vinca rosea*, 252.
— —, variation in, 883; in pathogenicity and virulence of, 1951.
Arnebia decumbens, antagonism of extracts from to *Verticillium dahliae*, 3336.
Aromatic derivatives, toxicity of, to fungi, 1871a,b.
— polysulphides, effect of, on *Alternaria tenuis*, 1872.
Arrhenatherum elatius dwarf virus in Czechoslovakia, resemblance of to oat sterile dwarf virus and transmission of by vectors, 2757.
Arsenate in combination as timber preservative, 2865c.
Arthrobacter, reclassification of, 519.
Arthrobotrys anchonia, vitamin requirements of, 3326.
— *dactyloides*, ring formation and closure by, 2368, 3325.
— —, vitamin requirements of, 3326.
— *oligospora*, vitamin requirements of, 3326.
Artichoke (*Cynara scolymus*), *Corticium solani* on, in France, 2596.
—, leaf mottle and necrosis of, in New S. Wales, 2942.
—, *Pythium* and *Verticillium dahliae* on, in France, 2596.
Artocarpus communis, see Breadfruit.
Aschersonia placenta on *Aleurolobus barodensis* in India, 1426.
**Ascochyta boltshauseri* on broad bean, 1799.
—*clematidina*, *Ascochyta* on clematis resembling, 1274.
— *cucumis* on cucumber, 573h.
— *fabae* on bean, 573c.
— — on broad bean, see Broad bean.
*— *hevea* on *Hevea* rubber, 2358d.
— *imperfecta*, see *Phoma herbarum* var. *medicaginis*.
— *phaseolorum* on bean, 3276.
— *pinodes*, see *Mycosphaerella pinodes*.
— *pisi* on clover and lucerne, 2879.
— — on pea, see Pea.
— —, technique for purifying UV light absorbing material associated with light-induced sporulation in, 255.
— *rabiei* on *Cicer arietinum*, 1384, 2345, 2891.
— *securinegae* on *Securinega suffruticosa*, 1060.
— *sojaecola* in U.S.S.R., hosts of, 3600.
— — on soybean, 1513i.
— *tarda* on coffee, 1264.
— *trifolii* on clover, 2940b.
Ascomycete on *Liquidambar styraciflua* forming mycorrhiza, 1891.
Ascomycetes in Lithuanian S.S.R., 1849j; list of, 2632a,b.
— on pine, 462.
— on timber, 3243.
Ascophanus carneus, mycelia from *Rhizoctonia rubiginosa* identified as, 10e.
Ascorbic acid, effect of *Verticillium dahliae* on content of, in cotton, 628.
Ascu 'A' as timber preservative, 1365.
Ash (*Fraxinus*), *Corticium galactinum* on, 2834.
—, *Cytophoma pruinosa* and *Fusicoccum* on, factors affecting, 160.
—, *Ganoderma lucidum* on, in U.S.A., 1108.
— leaf spot disease in Italy, virus resembling tobacco necrosis virus causing, 750.
— mosaic virus on ash in Europe, 442.
— ringspot virus on ash, hosts of and transmission of, by grafting, 1109.
Asparagus, *Fusarium culmorum* and *F sporum* on, 2369j.
— *officinalis*, *Puccinia asparagi* on, 3294.
— — virus, (?)str. of tobacco mosaic viru
Aspen (*Populus* spp.) [see also Poplar] c in U.S.A., caused by (?)*Valsa sc* correlation between *Marssonina* and, f affecting incidence and severity of, 75
—, *Ceratocystis fimbriata* on, in U.S.A.
—, *Ciborinia whetzelii* on, in Canada, parison of, with *C. pseudobifrons*, 21
— diseases in U.S.S.R., 3214.
—, *Fomes fomentarius* on, in U.S.S.R., 7
—, — *igniarius* on, in U.S.S.R., 760, 76
—, — *pinicola* on, in U.S.S.R., 762.
—, — *tremulae* on, in U.S.S.R., 2527.
—, fungi on bark of, in U.S.A., 2530.
—, *Ganoderma applanatum* on, in U.S. 762.
—, *Hypoxylon pruinatum* on, factors aff germination of, 3579.
—, *Lenzites betulina* on, in U.S.S.R., 76
—, *Marssonina* on, correlation between canker and, 759.
—, *Nectria galligena* on, in U.S.A., ho 2531.
—, *Pholiota squarrosa*, *Pleurotus ost Polyporus*, and *Trametes gibbosa* c U.S.S.R., 762.
Aspergillus, method for defining taxa in 2638.
— *candidus* in flour, 535.
— — on maize, stored, 3085.
— *chevalieri* in soil, 1908.
— *flavus* as test fungus, 1200.
— —, culture of, 1425.
— — in rhizosphere of cotton, 624.
— — in soil, 1908.
— — on cereals, 1455.
— — on cotton seed, 338.
— — on groundnut, see Groundnut.
— — on groundnut, stored, 3608.
— — on maize, 2706.
— — on maize, stored, 3085.
— — on *Proceras indicus*, 524.
— — on raisins, 1401.
— — on soybean, 1455, 3284.
— — on tobacco, 2824.
— *flavus-oryzae* in flour, 535.
— *foetidus* on lemon, 3439.
— *fumigatus* in rhizosphere of *Acer oides*, 2623.
— *glaucus* in flour, 535.
— — on soybean, stored, 3284.
— — on wheat, 591.
— *halophilicus* on wheat, 1974.
— *niger*, effect of phelam DP on, 2 volatile fungal metabolites on growt reproduction of, 49; of volatile fungal bolites from, on gametophytes of *Pte aquilinum*, 3347.
— — in soil, 1908, 2184b, 2627.
— —, inhibition of, by mercurated t dones, 1432.
— — on grapes, 836.
— — on groundnut, 204, *1806, 2571.
— — on groundnut, stored, 3608.
— — on mango, 3518.
— — on rice, 3416b.
— — on sisal, 3458.
— —, resistance of, to sevin, 860.
— —, technique for detecting and m conidia of, 1232.

[*ergillus*] *ochraceus* on maize, 2706, 185.
ryzae in soil, 1908.
arasiticus on groundnut, 1455.
– on *Saccharicoccus sacchari*, 524.
ulverulentus on groundnut, *1806, 2571.
estrictus on wheat, 1974.
erreus in rhizosphere of cotton, 336, 624.
– in soil, 54, 2184b.
stus in soil, 1362, 1908.
– on rice, 3416b.
ersicolor in flour, 535.
ventii, culture filtrate inducing yellow rap-leaf symptoms on *Chrysanthemum*, 147c.
– in soil, 1908.
r (*Callistephus chinensis*), *Fusarium oxyorum* f.sp. *callistephi* on, in U.S.S.R., 012; testing for resistance to 1606.
ing spot virus, serologically related to bacco rattle virus, 2208.
ellows virus in Canada, 3023; U.S.S.R., 142; host reactions of, 3023; transmission , 3023.
— on *Agallia quadripunctata*, 2658.
— on barley, 1523, 1953.
— on cereals and flax, 1953.
— on *Gladiolus*, 2039b.
— on oats, 1953, 3384.
— on potato, 1689, 2300.
— on wheat, 1953, 2678.
—, western, similarity of symptoms of *ladiolus* virus to, 1492i.
aeus pteridis on *Pseudotsuga menziesii* rming mycorrhiza, 2981.
agalus, *Ascochyta sojaecola* on, in U.S.S.R., 600.
ilicaulis and *A. globiceps*, antagonism of xtracts from, to *Verticillium dahliae*, 3336.
inicus, *Robinia pseudoacacia* mosaic virus n, 2844.
azine, effect of, on development of fungi in oil, 2627; on growth of *Corticium solani*, 46.
opa belladonna, potato virus X on, in J.S.S.R., 404.
acorthum solani not transmitting bean ellow mosaic virus, 2138.
eobasidium pullulans, biochemistry of morhogenesis of, 544.
—, effect of, on growth of *Armillaria ellea*, 2161a.
— on cherry, 2457a.
— on *Fuchsia*, 3460a.
— on pine, 461.
— on potato, 2498.
— on timber, 2548, 3251.
reofungin, effect of, on sclerotial development and germination of *Claviceps microephala* on *Pennisetum typhoideum*, 2709.
ocado pear (*Persea americana*), B, Ca, and Cu deficiencies in, 3149.
—, *Diplodia* on, 3498.
—, *Fusarium avenaceum*, *F. equiseti*, *F. moniliforme* var. *minus*, *F. oxysporum*, *F. semitectum*, *F. solani*, *Gibberella fujikuroi*, and *G. pulicaris* on, in Israel, symptoms of, 2289.
—, *Glomerella cingulata* on, in Argentina, 191.
—, iron chlorosis in, control, 392.
—, iron, Mg, Mn, N, and P deficiencies in, 3149.
[Avocado pear], *Phytophthora cinnamomi* on, control, 3148; production of oospores and chlamydospores of, in roots of and soil, 390; survival of, in soil, 390.
— —, potassium, S, and Zn deficiencies in, 3149.
— virus diseases, incidence, mode of transmission and symptoms of, 2e.
6-azauracil, against *Podosphaera leucotricha*, 232b.
— injury to apple, 232b.
— versus karathane, 232b.
Azotobacter chroococcum, inhibition of growth and nitrogen fixation by *Cephalosporium*, 3689.

Bl-58 in combination against vectors of wheat dwarf virus, 955.
Bacillus cereus, antagonism of, to phytopathogenic fungi, 3004.
— *macerans* on flax, 2940d.
— *mesentericus*, antagonism of, to phytopathogenic fungi, 3004.
— — on vegetable marrow, 2924.
— — *vulgatus* on cucurbits, 2923.
— *polymyxa* on timber, 175.
— *pumilus* in cotton bolls, 636.
— *subtilis* in rhizosphere of cotton, 624.
— — in soil, 3296.
— —, inhibition of, by antibiotics from *Fusarium oxysporum* f.sp. *vasinfectum*, 1586.
Bacteria, diurnal periodicity in airborne, 3642.
Bactericides, assimilation of systemic in plants, 3650.
Bacterium herbicola and *B. typhi flavum*, reclassified as *Erwinia herbicola*, 2958.
Bagnisiella bougainvillaeae on *Bougainvillea spectabilis*, 2241.
Bakerophoma pelargonii, associated with dieback of *Pelargonium capitatum*, 1678.
Banana (*Musa* spp.), (?)*Armillaria mellea* on, control, 1674.
—, B deficiency in, in Ecuador, 1912.
—, *Botryodiplodia theobromae* on, 2482; effect of temperature on, 1054; factors affecting pathogenicity of, 388; germination of spores of, 388.
— bunchy top virus on banana, CaO/MgO ratio in leaf not related to incidence or resistance, 3146a; control, 1674; possible relationship of anatomical changes induced by, to CaO/MgO ratio in plant tissues, 3146b; (?)relationship between nutritional status of soils and, 2481.
—, *Cephalosporium* on, 2482.
—, *Cercospora hayi* on, in Honduras, factors affecting spore dispersal and survival of, 1052.
—, (?)*Clitocybe* on, control, 1674.
—, *Colletotrichum musae* on, 2482; control, 3147; effect of hypochlorous acid on, 389; of temperature on, 1054; of volatile products given off by during ripening on growth of, 1676; of, on amino acid, sugar, and phenol content of skins, 2784b.
— corky scab, symptoms of, 1674.
—, *Corticum solani* on roots of, method for obtaining adventitious roots of, 2078.
—, crown rot of boxed, fungi associated with, 2482.
—, cucumber mosaic virus on, in the Antilles 2f.

[Banana, cucumber mosaic virus] strs. on, identification and purification of, 2077.
—, *Deightoniella torulosa* on, effect of, on free amino acids and C:N ratios of leaves of, 3516.
—, *Erwinia carotovora* on, in Israel, resemblance of, to ' head rot ' in Central America, 1516.
—, fungi on, association of, with nematode and non-nematode lesions on roots of, 1053; comparative analysis of leaves of resistant and susceptible vars., 2784a.
—, *Fusarium oxysporum* f.sp. *cubense* on, composition and origin of vascular gel in, 1675; variations and virulence in phenotypes from, 387.
—, — *roseum* ' Gibbosum ' on, 2482.
—, *Gibberella fujikuroi* on, 2482.
— ' head rot ' in Central America, resemblance of *Erwinia carotovora* on banana in Israel to, 1516.
—, *Helminthosporium gibberosporum* on, effect of, on free amino acids and C:N ratios of leaves of, 3516.
—, *Mycosphaerella musae* on, control, 1674.
—, — *musicola* on, control, 1674; effect of, on free amino acids and C:N ratios of leaves of, 3516; genetics of, 1854f; inheritance of resistance to, 1854f.
*—, *Phytophthora nicotianae* var. *parasitica* on, 218.
—, *Pseudomonas solanacearum* on, comparative carbohydrate catabolism in different strs. of, 243; effect of, on metabolism of, 235a.
—, *Verticillium theobromae* on, 2482.
— virus diseases, incidence, mode of transmission and symptoms of, 2e.
*Barberry (*Berberis*), *Aecidium graveolens* on, in Rumania, 559.
*—, *Phyllosticta westendorpii* on, in Czechoslovakia, 3355.
Barium salt, effect of, on *Puccinia graminis* on wheat, 3049.
Barley (*Hordeum*), aster yellows virus on, 1953; in Canada, 1523.
—, *Bromus* mosaic virus on, concentration and multiplication of, 1977, 2422a; effect of actinomycin D on, 3702; of, on nitrogen metabolism of, 2422b; of, on respiration of, 300; electron microscopy of, 1231d; factors affecting virus multiplication of, 2422b; hosts of, 2422a; multiplication and spread of, 2422a.
—, *Calonectria nivalis* on, effect of temperature on germination capacity of seeds of, 3062.
—, *Cephalosporium* on, 2939d.
—, *Cercosporella herpotrichoides* on, in the Irish Republic, 508b, 2695; *U.S.S.R., 580; control, 926, 1542; effect of, on, 926; of, on yield, 1542, 2421; factors affecting, 2695; first stages of infection by, 1955; virulence of, 287; weed grasses as reservoirs for, 508b.
*—, *Claviceps purpurea* on, in India, symptoms of, 3074.
—, clover phyllody virus on, in Rumania, symptoms of, 3375.
—, *Cochliobolus sativus* on, 595; in the Philippines, 2693; variability of types of, 595.
—, *Colletotrichum graminicola* on, effect of temperature on appressoria formation and penetration by, 2161c.
—, *Corynebacterium rathayi* on, 91.
—, *Cryptomela acutispora* on, relationship of barley yellow dwarf virus to, 1990.
[Barley], *Dactylis glomerata* mottle virus on
—, differential resistance of cell walls polysaccharide degrading enzymes *Colletotrichum lindemuthianum*, 2988.
— diseases, trials of resistant vars. in Arge 1954.
—, *Entyloma korshinskyi* on, in Israel,
—, *Erysiphe graminis* on, 5c, 1245; in Ger 6, 1844; U.S.S.R., 1513e; control, 528 of antagonistic microorganisms on of different cultures of on, 1546; of U on, 1547; of wepsyn on, 303; of, on e and protein changes in infected lea 1548; of, on photosynthesis and resp 593; of, on respiration of resistant an ceptible vars., 1986; of, on starch co 873; of, on yield, 6, 2695; genetics of haustorium formation and colony de ment of, 105; incidence of, 1844; synthesis and respiration of during in with conidia of, 959; use of detached to test viability of stored conidia, 96 react. to, 957, 958, 1981.
—, fungi on, isolation of, 1857.
—, fungus in roots of, resemblance *Rhizophydium graminis*, 2592o.
—, (?)*Lagena radicicola* in roots of, 25
— leaf spot virus disease in Bulgaria, inc of, and transmission of, by vectors, 30
*—, *Leptosphaeria nodorum* on, in Israel
—, maize rough dwarf virus can infect
—, northern cereal mosaic virus, on, in 2675.
—, *Ophiobolus graminis* on, 2592l, 304
—, *Ovularia hordei* on, in Israel, 2694.
—, *Penicillium viridi-cyclopium* on antibiotic activity of, 1549.
—, *Polymyxa graminis* in roots of, 2592
—, *Pseudomonas solanacearum* on, in C bia, hosts of, 2785.
—, *Puccinia* on, 1245.
—, — *graminis* on, in Canada, 2677; Ge 1960; behaviour of, 583; physiologi of, 1960.
—, — *hordei* on, in Germany, 1844; Indi U.S.S.R., 1513d; effect of 2,4-di phenoxyacetic acid on susceptibili 1544; of maleic hydrazide on, 937; of hydrazide on resistance to, 1543; gene 301, 1980; incidence of, 1844; phys races of, 956; var. react. to, 301, 957.
—, — *striiformis* on, distribution of ra 11b; effect of light on var. react. to incidence of, 103; isolates of, 2160h; p logic races of, 103; testing for resista 5c; var. react. to, 103, 1981.
—, *Pyrenophora graminea* on, in U 1513f; control, 89, 1987, 3072; occ of, 3073.
—, — *teres* on, in New S. Wales a Australia, control, effect of on yiel geographical distribution of wild ty lates of, inheritance and variabi morphological mutants in, 3409.
—, *Rhynchosporium secalis* on, 293 Canada, 1988; England, 1988, U.S.S.R., 918; increase in severity of review of, 1988, 1989; var. react. to,
—, *Sclerospora rayssiae* on, in Israel, toms of, 2694.
—, *Septoria passerinii* on, effect of R germination and infection of, in environment chamber, 106.

ley], storage disorders of, effect of time on, 549.
tripe mosaic virus on barley in Canada, 523; Germany, 1257; Yugoslavia, 592; normalities caused by, 592; effect of, on owth of, 1978; of, on respiratory metabolm of leaves of, 1979; electron microscopy , 911, 953; purification of, 954; review of erature on, 2696; self-inhibition of, 2161e; ansmission of, by seed, 592, 953.
Tilletia nanifica and *T. pancicii* on, factors fecting infection of, 3407.
Typhula incarnata on, in Germany, hosts of, 2.
Uromyces appendiculatus on, effect of, on spiration of, 1462.
Ustilago hordei on, in Nigeria, 1404a; J.S.S.R., 1513c; control, 1545, 2697; effect f fungicides on germinability of chlamydospores of, 961; factors affecting infection of, 407; genetics of, 12p; technique for separting from seed, 594.
— — × *U. nigra* on, inheritance of virulence in, 2424.
— *nigra* on, problems of immunity to, 3386.
— — × *U. hordei*, inheritance of virulence n, 2424.
— *nuda* on, 3069, 3630d; in Poland, 1176c; J.S.S.R., 1513c; breeding against, 1982; omparison of spore structure with *Ustilagioidea virens*, 2015; control, 104, 931, 1176c, 698, 3068, 3070, 3408; effect of seed size on ncidence of, 2699; of sowing time on reistance to, 1984; factors affecting, 931, 1985; enetics of, 302; increase in severity of, 695; mycelial development of, 1983; eview of, 931; var. react. to, 931.
wheat dwarf virus on, symptoms of and ransmission of, by vectors, 955.
yellow dwarf virus on barley in Canada, 1523; U.S.A., 1991; changes in predominting strs. of, 1991; effect of, on quality and ield, 3394; genetics of, 3310a; relationship f, with *Cryptomela acutispora* on barley, 1990; transmission of, by vectors, 1991.
— — — on cereals and grasses, 3395.
— — — on *Lolium multiflorum*, 3310b.
— — — on *L. perenne*, 2758.
— — — on oats, see Oats.
— — — on wheat, 1523, 1957, 3394.
— mosaic virus, effect of enzyme inhibitors on infectivity of, 2661.
samid, effect of, on mycorrhiza of beech, pine, and spruce, 1889.
sidiomycete on *Liquidambar styraciflua* forming mycorrhiza, 1891.
, low-temperature, respiration of intact cells of, 48.
sidiomycetes, biology and cultivation of, 1448.
in Europe, list of, 1476.
, mycoparasitism by, in culture, 2360.
on timber, 777, 3243, 3244.
, significance of clamp-connexion in, 271.
yer Ss 2074, paper on, 230p.
Bean, broad (*Vicia faba*), *Ascochyta boltshauseri* on, in Hungary, 1799.
—, — *fabae* on, 1381; in U.S.S.R., 194, 573c, 797, 1513i; control, 194, 2891; effect of changes in age in, on development of, 195; factors affecting, 797; resistance to, 573d; specialization of, 1798; var. react. to, 573c, 797.
[Bean, broad], bacteria on, in U.S.S.R., properties of, 485.
—, —, bacterial disease in Germany, resemblance of, to *Pseudomonas fabae*, 798.
—, —, bean mosaic virus on, in U.S.S.R., 194.
—, —, — yellow mosaic virus on, 704; in Iran, 3279; U.S.S.R., 1142; hosts of and transmission of, by vectors, 2138.
—, —, *Botrytis cinerea* on, in Latvia and U.S.S.R., 196; *B. fabae* form of, 196; biochemical changes in infection droplets containing spores of, 3280.
—, —, — *fabae* on, in Iran, 3279; Latvia, 196; U.S.S.R., 196, 573c, 797, 1513i; biochemical changes in infection droplets containing spores of, 3280; control, 26, 2889; effect of, on yield, 3279; factors affecting, 797; form of *B. cinerea*, 196; var. react. to, 573c, 797.
—, —, clover white mosaic virus on, in Czechoslovakia, 2761.
—, —, — red mottle virus can infect, 141.
—, —, diseases in Iran, 3279.
—, —, effect of viruses of market garden plants on, 1492o.
—, —, *Fusarium* on, serology of var. react. to, 1800.
—, —, — *oxysporum* on, 3282; in U.S.S.R., 194, 1513i; control, 194; immunological relationships between plant globulins and, 2612; possible role of amino acids in resistance to, 3281; serology of var. react. to, 1800.
—, —, —(?)—f.sp. *pisi* on, in Switzerland, 1846.
—, —, — *solani* on, 3282.
—, —, Leguminosae witches' broom virus on, 724.
—, —, *Macrosporium commune* on, in U.S.S.R., 1801; transmission of, by overwintered plant remains and by seed, 1801.
—, —, mosaic virus on broad bean in Egypt, 3278; different from broad bean mottle and true mosaic viruses, 1492p; hosts and properties of, 3278; transmission of, by sap and seed, 1492p; vectors, 3278.
—, —, mottle virus on broad bean, analysis of electron micrograph of and comparison of with turnip yellow mosaic virus, 1936; similarity of virus particles of cucumber mosaic virus to, 1937; X-ray diffraction studies of, 3379.
—, —, moulds on, in U.S.S.R., 2561.
—, —, pea enation mosaic virus on, in U.S.S.R. 1142.
—, —, — leaf roll virus on, in U.S.S.R., 1142.
—, —, — mosaic on, in Czechoslovakia, 2888; U.S.S.R., 1142.
—, —, — seed-borne mosaic virus on, in Japan, 2560.
—, —, *Pseudomonas fabae* on, in U.S.S.R., resistance to, 486.
—, —, *Rhizoctonia* on, pathogenicity of isolates of, 579.
—, —, *Robinia pseudoacacia* mosaic virus on, 2844.
—, —, spotting by potassium chlorate, effect of on yield, 2567.
—, —, stain virus on broad bean, serological relationships of, 2592f.
—, —, tobacco necrosis virus on, 2918.
— —, *Uromyces appendiculatus* on, effect of on respiration of, 1462.
—, —, — *viciae-fabae* on, in Iran, 3279; U.S.S.R., 194, 1513i; control, 194; cytokinin activity in, 538, 1797; factors affecting, 3279.
—, —, *Verticillium dahliae* on, 2747.

Bean, French and runner (*Phaseolus* spp.), *Agrobacterium rhizogenes* and *A. rubi* on, comparative study of tumour initiating ability of strs. of, 2948b.
—, — *tumefaciens* on, application and development of quantitative bioassay for, 3322; comparative study of tumour initiating ability of strs. of, 2948b; production and pathogenicity of sphaeroplasts of, 2167a; quantitative studies of growth and developmental interactions between, 2948a; time required for tumour initiation by, 1417.
—, *Alternaria* in rhizosphere of, in U.S.S.R., 61a.
—, — *tenuis* on, effect of, on ectodesmata, 871.
—, antagonism of, to *Corticium solani*, 3682.
—, *Ascochyta fabae* on, in U.S.S.R., 573c.
—, — *phaseolorum* on, in Queensland, hosts and symptoms of, 3276.
—, — *sojaecola* on, in U.S.S.R., 3600.
—, *Botrytis fabae* on, in U.S.S.R., 573c; sporulation of, 1152.
—, *Cercospora* on, in Venezuela, 3274.
—, citrus infectious variegation virus can infect, 611.
—, clover red mottle virus can infect, 141.
—, clover, subterranean, stunt virus on, not transmitted mechanically or by seed, symptoms, transmission and var. react. to, 790.
—, — yellow mosaic virus on, natural spread of, to, 2883.
—, *Colletotrichum lindemuthianum* on, in Hungary, 1793; U.S.S.R., 3275; Venezuela, 3274; control, 533; development of, 3275; examination of resistance to, 1793; factors affecting, 2341; non-volatile organic acid content of healthy and infected plants, 791; var. react. to, 792, 3275.
— common mosaic virus on bean, 1142; U.A.R., 481a,b; U.S.S.R., 3272; cowpea aphid-borne mosaic virus serologically related to, 202; distribution, movement and serology of, 481b; identification of, 3272; selection of healthy plants, 3273; serological method of identification of, 2884; study on, 481a; transmission of, by seed, 3273; by vectors, 482, 2657.
— — — — on broad bean, 194.
— — — — on *Phaseolus mungo*, 1142.
—, *Coronilla varia* virus on, symptoms of, 3316a.
—, *Corticium solani* on, in Venezuela, 3274; effect of lesion maturation on oxidase activity of, 2135c; on respiration of, 2135b; of planting depth and asphalt mulch on, 2134; enzyme activity in, 2135a; macroscopic stages of lesion maturation in, 2135a.
—, *Corynebacterium flaccumfaciens* on, in Turkey, 2566.
— diseases in Costa Rica, 1854e; description of, 1380.
—, effect of fusaric acid on *in vitro* culture of embryos of, 2989; of gnotobiotic environment on growth of, 1517.
—, *Erysiphe polygoni* on, in Venezuela, 3274; control, 794, 862, 2600a, 3634a.
—, fungi in rhizosphere of, effect of root exudates of and soil mycostasis on, 2133.
—, — on, comparison of, from non-rhizosphere and rhizosphere soil, 2562.
—, *Fusarium oxysporum* on, ff.sp. associated with, 2187.
[Bean, *Fusarium oxysporum*] f.sp. *phaseoli* ff.sp. *batatas*, *cubense*, and *niveum* assoc with, 2187.
—, — — f.sp. *vasinfectum* on, *F. solani* *phaseoli* associated with, 2187.
—, — *solani* f.sp. *phaseoli* on, in Venez 3274; *F. oxysporum* f.sp. *vasinfectum* a *solani* f.sp. *cucurbitae* associated with, histopathology and phytoalexin induct resistant or susceptible vars, 2342; physi of chlamydospore formation and surviv 2882; polygalacturonate trans-eliminas duction by, 875; study on, 2881.
—, *Humicola grisea* on, in rhizosphere of,
—, *Isariopsis griseola* on, in Venezuela, 3
—, Leguminosae witches' broom virus o
—, lucerne mosaic virus on, natural spr to, 2883; symptomless host of, 2947e.
—, — — — str. on, in Belgium, sympto 282.
—, *Macrophomina phaseoli* on, 2295 Venezuela, 3274.
—, *Mycogone* in rhizosphere of, in U.S.S.F
—, *Nectria radicicola* in rhizosphere of,
—, pea early browning virus on, sympto logical difference between stable and stable variants of, 3025.
—, *Penicillium chrysogenum*, *P. kapuscinsk janthinellum*, and *P. nigricans* in rhizo of, 61a.
—, *Phaeoisariopsis griseola* on, in Tan eradication of, incorrectly referred *Isariopsis griseola*, 2343.
—, *Pseudomonas fabae* on, in U.S. resistance to, 486.
—, — *phaseolicola* on, 2938c; in Eng 2887; Israel, 795; control, 1795, 3277; of toxin from on, 484; on accumulati L-ornithine in infected leaves of, growth of, 1423; role of seed contami in transmission of, 1795; sources of infe by physiologic races of, 2887; techniqu detecting, 838; var. react. to, 1150.
—, *Pythium aphanidermatum* on, in Venez 3274.
—, *Ramularia phaseoli* on, geographical tribution and nomenclature of, 2136.
—, — *phaseolina* on, in Brazil, 1149.
—, *Rhizoctonia* on, effect of organic an ments on, 3686; pathogenicity of isolat 579.
—, *Robinia pseudoacacia* mosaic virus 2844.
— root rot in U.S.A., 191; associated *Corticium solani* and *Fusarium solani* *phaseoli* in soil, 190.
—, *Sclerotinia fructicola* on, phytoalexin fo tion in, 3u.
—, *Sclerotium rolfsii* on, in Gabon, Venezuela, 3274; pectolytic and cellul activities of, 2885.
— southern mosaic virus, electrophoreti serological differences between bean cowpea strs. of, 2161k; long term stora 916.
— — — — on bean, comparison of sensi of serological tests for, 73; transportati in xylem of, 2945b.
—, *Synchytrium* on, in Turkey, (?)ide with *S. ajrekari* on bean in India, 5e.
—, *Thielaviopsis basicola* on, histopath and phytoalexin induction in resistan susceptible, 2342.

Bean], tobacco mosaic virus on, changes in ascorbate concentration of leaves of caused by, 2403; effect of active and UV-inactivated strs. on, 3026; of fluoride on virulence of, 913; of light on susceptibility to, 1850d; of light intensity, temperature, and length of preinoculation dark period on, 2402; inhibition of, by blasticidin S, 1099; possible role of peroxidase, ascorbate, and phenolic constituents in resistance to, 2595a; stimulation of, by fluoride, 3271.
—, — necrosis virus on, changes in carbohydrate and N metabolism of, 2401a; effect of darkening on susceptibility to, 3027; of light deficiency on metabolic changes in, 3373; of nutrients on metabolic changes in, 2401b; of rooting on multiplication and symptom expression in detached leaves of, 3372; transportation of, in xylem of, 2945b.
—, — streak virus on, natural spread of, 2883.
—, *Trichoderma viride* in rhizosphere of, 2562.
—, uptake and metabolism of 2-thio-6-azauracil,2-methylthio-6-azauracil and glyoxylic acid thiosemicarbazone by roots of, 3331.
—, *Uromyces appendiculatus* on, in Colombia, 2563; Costa Rica, 2564; E. Africa, 1148; Gabon, 1941; New S. Wales and Queensland, 2357f; Venezuela, 3274; cytokinin activity in, 538, 1797; cytology of infection structure development in urediospore germ tubes of, 2565; effect of DCTFA on, 3653; of gravitation on development of, 483; of light on changes produced by on content of amino-acids, 2886; on germination of uredospores of, 793; of, on phloem transport, 872; on starch content, 873; evaluation of resistance to, 2564; physiologic races of, 1148, 2564; resistance to, 1148; amino acids inducing, 1796; var. react. to, 792, 2357f.
—, *Verticillium dahliae* on, 2747.
— virus disease, new, on bean, hosts and properties of, similarity of symptoms of, to 2,4-D injury, 13r.
— — diseases, spread of, 2883.
—, *Xanthomonas* on, effect of *Bidens cernuus* preparations on, 1879.
—, — *phaseoli* on, in Canada, 2137; Turkey, 2566; control, 192, 2566; phage types of, 2137.
—, — — var. *fuscans* on, control, 192; effect of temp. on viability, virulence, and physiologic characteristics of, 796.
— yellow mosaic virus on bean, 2883; in U.S.S.R., 1142; production of serum for detection of, 1931; relationship of clover virus to, 2159e.
— — — — on broad bean, 1142, 2138, 3279.
— — — — on clover, see Clover.
— — — — on cowpea, 1142.
— — — — on *Gladiolus*, 2039b.
— — — — on lupin, 1142.
— — — — on opium poppy, 704.
— — — — on soybean and *Vigna catjang*, 1142.
— — — — str. on lupin, 1640.
—, runner (*Phaseolus coccineus*), mosaic virus on in India, designated runner bean mosaic virus, distinct from bean yellow mosaic and common bean mosaic viruses, transmission of by sap and seed, to *Sesbania aculeata*, 799.
Beauveria bassiana against Colorado beetles, 2367.
[*Beauveria bassiana*], culture of, 1425.
— —, *Melanospora parasitica* on, in U.S.S.R., 2170.
— — on *Aphimallon solstitiale* and Coleoptera in U.S.S.R., 2170.
Beech (*Fagus*), *Armillaria mellea*, *Fomes fomentarius*, *F. igniarius*, *F. pinicola*, and *Pholiota adiposa* on, in U.S.S.R., 751.
—, mycorrhiza of, absorption of nitrogen by, 1206; effect of soil disinfectants on, 1889.
*—, *Phyllosticta stettiniana* on, in Poland, 1916.
— ring mottle virus on beech in Europe, 442.
— stunting virus disease in Denmark, 510c.
Beet (*Beta vulgaris*), *Acremoniella atra* on seed of, cultural and morphological characters of, 786.
—, *Alternaria* on, biology of, 1782; effect of beet mild yellowing virus on susceptibility to, 2872.
—, — *consortialis* on seed of, cultural and morphological characters of, f.sp. *levis* proposed for, 786.
—, — *tenuis* on seed of, 786.
—, *Aphanomyces cochlioides* on, in Germany, 1784a; chemotaxis of zoospores of, 1140; comparison of, with ' caida ' disease of beet in Chile, 1784a; control, 1784a; effect of dexon and L-methionine on, 1784c; of, on growth of, 1784b; selection of seedlings for resistance to, 1783.
—, *Aspergillus* on, biology of, 1782.
— black leg in U.S.S.R., 1513j, 2555; control, 578, 2556; distinction of beet strangling disease from, 1786; immunity to, 3387.
— — spot, control, 1787.
—, *Botrytis cinerea* on, aggressiveness of, 2340.
—, *Cercospora beticola* on, in Argentina, 2874; Austria, 788; Czechoslovakia, 472; Poland, 2597; U.S.A., 3266; U.S.S.R., 2555, 2940c, 3593; causing storage disease, 472; control, 182, 530a, 787, 788, 1780, 2873, 2964, 3265, 3266; distribution of, 2597; effect of light on sporulation of, 3264a; on symptoms of, 3264b; of mineral substances from, on germination, 3263; of, on yield and sugar content, 789; factors affecting, 789, 1781; conidium release and dispersal in, 3595; genetics of, 789; micro-manipulator for isolating spores of, 2874; types of, 2874; var. react. to, 789, 3263, 3593.
—, *Cladosporium* on, biology of, 1782.
—, *Cochliobolus sativus* on seed of, cultural and morphological characters of, 786.
—, *Colletotrichum coccodes* and *C. dematium* on, 186.
—, *Corticium solani* on, 1785.
—, cucumber mosaic virus on, factors affecting increase in virus infectivity, 2202.
— curly top virus, cross-protection between strs. in vectors of, and transmission of by vectors, 2127.
— — — — on beet, degeneration of sieve element plastids in, 2554.
— — — — on *Lycopersicon*, *L. hirsutum*, and tomato, 2828.
— damping-off, effect of soil treatment on, 1468.
— diseases in U.S.S.R., 918, 1513j, 3593.
—, *Erysiphe betae* on, in Denmark, 1138; England, 2160f; Italy, 474; U.S.S.R., 2555, 2940c, 3593; biology of, 1782; causing 'mal bianco', 474; conidial germination of, 2557;

control, 1782; effect of beet mild yellowing virus on susceptibility to, 1137b, 2872; of beet yellows virus on susceptibility to, 1137b; factors affecting, 2557; interaction between *Peronospora farinosa* and, 473; preferred as name to *E. communis* or *E. polygoni*, 1138; technique for staining with iodine, 566; transmission of, by wind-borne spores from Germany, 1138; var. react. to, 3593.
[Beet], fungi in rhizosphere of, 888.
—, — isolated from, 1857.
—, *Fusarium* on, 786; aggressiveness of, 2340; biology of, 1782.
— leaf curl virus on beet in Poland, 1242, 2552, 2597; control, 2128; distribution of, 2597; forecast of, 1242; historical account of spread of, 2652a; hosts of, 1135; overwintering of, 1135; review of relationship between vector and, 2128; spread of, 1135; transmission of, by grafting, 785a; vectors, 1135, 2128, 2552; to spinach and *Tetragonia expansa*, 785a.
— mild yellowing virus on beet in England, 2160d; (?)correlated with sunspot activity, 1376; cryptic virus in sap of, 2592a; effect of, on bolting of, 2872; on susceptibility of, to *Erysiphe betae*, 1137a,b; to fungi, 2872; to *Peronospora farinosa*, 1137a,b; on yield, 2592u; factors affecting, 1375; hosts of, 181; technique for identifying and separating from beet yellows virus, 181; var. react. to, 2160d.
— mosaic virus on beet in Czechoslovakia, 1136; Japan, 2129; U.S.S.R., 3593; genetic tolerance of, 1374; not transmitted by seed, 1374; relationship of, to spinach mosaic virus, 2129; transmission of, by vectors, 1933; var. react. to, 1136, 3593.
— — — + beet yellows virus on beet, inhibition of, 2871.
(?)— — — str. on beet, 1779.
—, *Mucor* on, biology of, 1782.
— mycorrhiza, factors affecting, 38.
—, *Nigrospora sphaerica* on seed of, 786.
—, *Penicillium* on, aggressiveness of, 2340; biology of, 1782.
—, *Periconia igniaria* on seed of, cultural and morphological characters of, 786.
—, *Peronospora farinosa* on, in U.S.S.R., 185, 2940c, 2555, 3593; control, 185, 231h, 2558, 2592w; effect of isolates of beet yellows and beet mild yellowing viruses on susceptibility to, 1137a; effect of, on yield, 185; factors affecting, 185; field experiments on, 3594; incidence of, 2592w; interaction between *Erysiphe betae* and, 473; overwintering of, 185; var. react. to, 2160e, 3593.
—, *Pleospora bjoerlingii* on, 786; in the Irish Republic, 508d; U.S.S.R., 2940c; aggressiveness of, 2340; control, 182, 787, 2594g; effect of phytoncides on resistance to, 80f, 466; factors affecting, 183; survival of, 508d.
—, (?)*Polymyxa* on, distinct from *P. betae*, 2559; causing rhizomania, 2559.
—, — *betae* on, in Italy and Germany, 2131.
*—, *Pseudomonas wieringae* on, in U.S.S.R., effect of, on stored, 1141.
—, *Pythium* on, control, 184; effect of, on growth of, 1784b.
—, — *debaryanum* on, effect of, on growth of, 1784b.
*—, — *irregulare* on, in U.S.S.R., symptoms of, 1139.
[Beet, *Pythium*] *ultimum* on, control, 182, 78[illegible]
—, *Rhizoctonia* on, biology of, 1782; contr[illegible] 184, 1782, 3265.
—, *Rhizopus stolonifer* on, aggressiveness [illegible] 2340.
— root rots in U.S.S.R., 3593; var. react. [illegible] 3593.
—, storage disorders, 472; in U.S.S.R., 1[illegible]4 3593.
— strangling disease in Austria, 1786; distri[illegible] tion of, from beet black leg, 1786; incidenc[illegible] of, 1786.
—, tomato black ring virus on, in Germa[illegible] 1823.
—, turnip mild yellow virus on, in Europe a[illegible] N. America, 2592i.
—, *Uromyces betae* on, in U.S.S.R., 2940[illegible] 3593.
— western yellows virus on beet in U.S.A. 3262; differentiation of turnip mild yellow[illegible] virus from, 2592i; factors affecting, 32[illegible] incidence of, not related to aphid populati[illegible] 3262; purification of, 13s; serologic[illegible] neutralization of infectivity of, 2339; trans[illegible] mission of, by vectors, 3262.
— — — — on lettuce, 496.
— — — + lettuce mosaic viruses on lettu[illegible] 496.
— — — + beet yellows viruses on be[illegible] effect of, on seed production by, 1777.
— yellow net mild virus on beet, cryptic virus [illegible] sap of, 2592a.
— yellows virus on *Amaranthus aureus* and [illegible] *speciosus*, 2553.
— — — on beet in Belgium, 3260; Czechoslovakia, 1136; Poland, 2552, 2553, 259[illegible] U.S.A., 3261; U.S.S.R., 2940c, 3593; contro[illegible] 1778; (?)correlated with sunspot activit[illegible] 1376; cryptic virus in sap of, 2592a; di[illegible] tribution of, 2597; effect of, on bolting, 287[illegible] of, on chemical composition of sap of, 213[illegible] of, on susceptibility of, to *Erysiphe betae* an[illegible] *Peronospora farinosa*, 1137a,b; of, on yiel[illegible] 2592u, 3261; factors affecting, 1375; no[illegible] control by systemic insecticides, 32[illegible] historical account of spread of, 2652a; no[illegible] transmission of, by seed 2553, 2871; by so[illegible] 2553; technique for identifying and separa[illegible] ing beet mild yellows virus from, 18[illegible] transmission of, by grafting and mechan[illegible] cally, 2553; by vectors, 471, 1933, 255[illegible] 2553, 3261; var. react. to, 1136, 1776, 359[illegible]
— — — + beet mosaic virus on beet, inhib[illegible] tion of, 2871.
— — — + beet western yellows virus on be[illegible] effect of, on seed production by, 1777.
**Begonia*, *Oidium begoniae* on, in Rumani[illegible] 3693.
Bemisia tabaci transmitting *Anthurium andraeanum* virus disease, 1854c; jute yellow mosa[illegible] virus, 1599; *Malvastrum coromandelia[illegible]* yellow vein mosaic virus, 76; tomato yellow[illegible] leaf curl virus, 286.
Benincasa cerifera as a melon rootsto[illegible] against *Fusarium* disease, 234.
Benzene hexachloride in combination as se[illegible] treatment broad bean, 194; pea, 114[illegible]
γ— — in combination against *Tilletia caries* 2688.
Benzocide against *Ascochyta fabae* on broa[illegible] bean, 2891.
2,3-benzoxazolinone, method for determini[illegible] in rye, 2990.

Berberis, see Barberry.
Bercema-ferbam 50 against *Corticium solani* on pine, 773.
— — as soil disinfectant, 773.
— — in combination against *Pseudopeziza medicaginis* on lucerne, 1639.
Bermuda grass, see *Cynodon dactylon*.
Berry plants, diseases of, 2nd ed. of Russian handbook on, 369.
Beta, Erysiphe betae on, 2395.
— *vulgaris*, see Beet.
Betel, see *Piper betle*.
Betula, see Birch.
BHC, see Benzene hexachloride.
Bidens cernuus preparations, effect of, on phytopathogenic bacteria, 1879.
— *pilosa, Cercospora coffeicola* on, 2023c.
Bifusella faullii on *Abies balsamea*, 158a.
Binapacryl against *Podosphaera leucotricha* on apple, 3129; on pear, 2270.
— injury to pear, 2270.
—, use of, 230o.
Biological literature, use of, book on, 1859.
— methods in crop pest control, book on, 2361.
Biomycin, effect of, on *Bacillus mesentericus* on vegetable marrow, 2924; on *Pseudomonas lachrymans* on cucumber, 2924.
Biphenyl against orange fruit rots, 1006.
Bipolaris iridis, comb.nov. for *Clasterosporium iridis*, 1276.
*— *micropa* on *Leptochloa panicea*, 664.
Birch (*Betula*), *Ceratocystis fimbriata* on, in U.S.A., 2531.
—, *Diaporthe alleghaniensis* on, in Canada, *Phomopsis* state of, 3575.
— diseases in U.S.S.R., 3214.
—, *Fomes igniarius* on, in U.S.S.R., 2527.
— heartwood stain, fungi associated with, (?)*Trichocladium canadense* causing, 2111.
—, *Nectria galligena* on, in U.S.A., 2531.
—, *Ophiostoma roboris* on, similarity of to *Graphium* and *Hyalodendron* states of on oak, transmission of by vectors, 752.
—, *Polyporus hirsutus* on, 3245.
—, — *sulphureus* on, in U.S.S.R., 2527.
—, *Polystictus versicolor* and *P. zonatus* on, 3245.
—, *Poria obliqua* on, in U.S.S.R., 2527.
— ringspot virus on birch in Europe, 442.
— stem pitting (?)virus in Europe, W., non-occurrence of, in Bulgaria, similarity of symptoms of to apple stem pitting and citrus stem pitting, 3574.
—, use of ash from, against *Gibberella fujikuroi* on pine, 2853.
Bis(*p*-chlorophenyl)-3-pyridinemethanol, see El-(241).
Bitumen water emulsions as wound dressing, 672.
Blackberry (*Rubus* spp.) mosaic virus disease, hosts and symptoms of, transmission of by grafting, 2947d.
Blakeslea trispora, purification of sexual factor from mated strs. of, 3672.
Blasticidin against *Hemileia vastatrix* on coffee, 2728.
— M against *Scirrhia pini* on pine, 3229.
— S against *Pyricularia oryzae* on rice, 120, 235k, 3423a.
— —, biological and chemical reconstruction of, 31.
— —, inhibition of tobacco mosaic virus by, 1099.
— —, toxicity of, to rice, 120.
— SM, against *Pyricularia oryzae* on rice, 120.
— —, toxicity of, to rice, 120.
Blastin, see PCBA.
Blumeriella jaapii in Latvian SSR., 1849c; hosts of, 375, 1849c.
— — on cherry, see Cherry.
Boletaceae in Lithuanian SSR., review of, 1849o.
Boletus calopus on *Liquidambar styraciflua* forming mycorrhiza, 1891.
— *edulis*, Russian monograph on, 1174.
— *fraternus* on *Liquidambar styraciflua* forming mycorrhiza, 1891.
— *granulatus*, effect of *Aphelenchoides* on growth of, 2980.
— *luteus* on pine forming mycorrhiza, 2979.
— *sibiricus* on pine forming mycorrhiza, 2378.
— *subolivaceous* on *Pseudotsuga menziesii* forming mycorrhiza, 2981.
Borax against die-back of pine, 2861.
— as seed treatment for cotton, 2237.
Bordeaux mixture, assay of, as soil fungicide, 861.
— —, constituents of, 1433.
— —, development of ready-to-use mixture of, 2174.
— —, effect of, on *Plasmopara viticola*-infected vine, 2156.
— —, estimation of blocking power of, on *Plasmopara viticola* on vine, 1400a.
— —, toxicity of, to pine, 1758.
— — oil sprays against *Guignardia citricarpa* on orange, 3438.
Boric acid against coconut leaf rot, 710; *Plasmopara viticola, Sclerotinia fuckeliana*, and *Uncinula necator* on vine, 2155.
— — as seed treatment for cotton, 2237; wheat, 2416, 3058.
— —, effect of, on *Agrobacterium tumefaciens* on *Datura stramonium*, 3324c.
Boron, as seed treatment for melon, 501a.
— deficiency in avocado pear, 3149; banana, 1912; cacao, 1912, 3392; coconut, 710; cotton, 1595; oil palm, 3389; strawberry, 3145; vine, 2931d.
—, effect of, on growth of green-point galls in cacao, 2599f; on *Verticillium* on cotton, 3453.
— toxicity in vine, 2931d.
— acid sulphate as seed treatment for beet, 2556.
— compounds against B deficiency in cacao, 3392.
— salt, effect of on *Puccinia graminis* on wheat, 3049.
Botanical Nomenclature, international code of, 1470.
Botanists in Rumania, general index of, 1856.
Botran against *Rhizopus stolonifer* on sweet potato, 1324.
—, effect of, on fruit yield of cranberry, 1669.
— in combination as bulb treatment for lily, 3114.
Botrilex, see Quintozene.
Botryodiplodia theobromae on *Acer pseudoplatanus*, 13f.
— — on *Araucaria cunninghamii*, 767.
— — on banana, see Banana.
— — on *Chrysophyllum cainito*, 3517.
*— — on coconut, 2088.
— — on *Elaeagnus angustifolia*, 3634n.
— — on guava, 1054.
— — on *Hevea* rubber, 1089a.
— — on mango, 1054, 1853, 3517.

[*Botryodiplodia theobromae*] on papaw, 1056, 3517.
— — on *Parthenium argentatum*, 3554.
— — on *Pelargonium capitatum*, 1678.
— — on pine, 1353a.
— —, production of botryodiplodin by, 866.
Botryodiplodin, biological properties and isolation of, 866.
Botryosphaeria corticis on *Vaccinium*, 1046.
— *piceae* on spruce, 158f.
— *ribis* on apple, see Apple.
**Botryosporium palmicolum* on *Capsicum*, 828.
Botryotrichum piluliferum, growth of *Pythium oligandrum* with, on cellulose film, 59.
Botrytis allii, effect of antibiotics and growth inhibitors on, 256.
— —, heterocaryosis in, 899b.
— — on onion, see Onion.
— —, toxicity of dithiocarbamate derivatives to, 1875.
— —, utilization of carbohydrates by, 256.
— *byssoidea*, heterocaryosis in, 899b.
— *cinerea*, antagonism of, to *Fomes annosus*, 2863.
— —, association of, with *Zythia fragariae* on strawberry, 3513.
— —, *B. croci* on crocus different from, 510a.
— —, development of on higher sugar concentrations, 2369h.
— —, effect of antibiotics and growth inhibitors on, 256; of drying on viability of germinated spores of, 3339; of euparen, horticritt, and orthophaltan on, 3651; of low temperatures on mycelial growth rate and sporulation of, 247; of sodium orthophenylphenate on development of, 1195; of tetrachlorethylene fungicides on, 2606; of volatile fungal metabolites on growth and reproduction of, 49; of volatile metabolites from, on gametophytes of *Pteridium aquilinum*, 3347.
— —, heterocaryosis in, 899b.
— — on *Abies balsamea*, 1128.
*— — on almond, 691.
— — on beet, 2340.
— — on broad bean, 196, 3280.
— — on cabbage, 784, 1372, 1847h.
— — on *Capsicum*, 1241.
— — on *Chrysanthemum morifolium*, 342.
— — on *Cicer arietinum*, 2346.
— — on Coniferae, 440.
— — on currant, 231e, 3141.
— — on cyclamen, 3651.
— — on flax, 1c, 637, 638.
— — on *Fuchsia*, 3460a.
— — on grapes, 836, 837, 2934, 3625, 3626, 3627 (see also Vine).
— — on *Hydrangea*, 654, 1241.
— — on lettuce, 5a, 26.
— — on lucerne seed, 2767.
— — on lupin, 1030.
— — on onion, 3291.
— — on *Onobrychis viciaefolia*, 1641.
— — on *Parthenium argentatum*, 3554.
— — on pea, 1513i.
— — on *Pelargonium*, 659, 1281.
— — on potato, 2498.
— — on *Pseudotsuga menziesii*, 1128.
— — on *Pteridium aquilinum*, 2176.
— — on raspberry, 1670, 3311b.
— — on *Rhus typhina*, 2083.
— — on rose, 1241.
— — on spruce, 1128.
[*Botrytis cinerea*] on strawberry, see Strawberr
— — on tomato, 1175j, 1332, 3571.
— — on *Tsuga*, 1128.
— — on tulip, 3460b.
— — on vine, see Vine.
— —, toxicity of dithiocarbamates to, 1874.
— —, utilization of carbohydrates by, 256.
— *croci* on crocus, 510a.
— *fabae* on bean, 573c.
— — on broad bean, see Bean, broad.
— *septospora* on onion, 3292.
— *tulipae*, effect of fungicides on growth o 2965.
— — on tulip, 1624, 1625, 3460b.
— *yuae* associated with *Cercospora unamu* on *Capsicum* and *Cladosporium fulvum* c tomato, 2583.
Bougainvillea, *Cercospora bougainvilleae* on, India, 267.
— *glabra*, *Alternaria tenuissima*, **Colleto chum capsici*, and **Pithomyces chartarum* o in India, 267.
— *spectabilis*, *Bagnisiella bougainvillaeae* fungi on, 2241.
Boverin, composition of, 2367.
Box (*Buxus*), *Colletotrichum* on, 2947g.
*—, *Phyllosticta auerswaldii* and *P. phacidioi* on, in Czechoslovakia, 3355.
—, *Phytophthora nicotianae* var. *parasitica* o hosts of, 134.
Brachycaudus helichrysi transmitting pea m aic virus, 3378.
Brachysporium, revision of, 1228c.
Brassica alba, see Mustard.
— *campestris*, Youcai mosaic virus on, China, 1505; str. of tobacco mosaic viru 1505.
— *chinensis*, turnip yellow mosaic virus o electron microscopy of, 2654.
— *napobrassica*, see Swede.
— *nigra*, see Mustard.
— *oleracea*, see Broccoli, Brussels sprout Cabbage, Cauliflower.
— — var. *acephala*, see Kale.
— *pekinensis*, see Cabbage, Chinese.
— *rapa*, see Turnip.
— — var. *neosuguki*, *Plasmodiophora brassic* on, production of indole acetic acid by, 46
— *sinapis*, see Mustard, yellow.
Brassicae, turnip mild yellows virus on, 2592
Brassicol, see Quintozene.
Breadfruit (*Artocarpus communis*) 'pingela disease in Guam, Gilbert & Ellis Is., a Formosa, 1403b; Pacific Islands, 1057.
Brefeldin A, production of by *Penicillium br feldianum*, chemical and physical properti of nectrolide identical with, 2992.
Bremia lactucae, effect of temp. on germinati and sporulation of, 1445.
— — on lettuce, 498, 2594a, 3297.
— — on *Sonchus oleraceus*, 1445.
Brestan against *Alternaria solani* on potat 2809; *Marssonina* on poplar, 451.
— 60 against *Puccinia pelargonii-zonalis* ' *Pelargonium*, 1620.
— —, toxicity of, to *Pelargonium*, 1620.
Brevicoryne brassicae transmitting cauliflow mosaic virus, 2337.
Briza maxima and *B. minor*, *Podosporiel verticillata* on, in New S. Wales, 9.
Broccoli (*Brassica oleracea*) leaf scorch in t Irish Republic, effect of soil organic N o 470.

Broccoli], Mn deficiency in, soil fumigation with dichloropropenes causing, 3592.
—, *Peronospora parasitica* on, genetics of resistance to races of, 2126.
— stem rot in the Irish Republic, effect of soil organic nitrogen on, 470.
Bromus, maize dwarf mosaic virus on, in U.S.A., (?)overwintering of, 975a.
— mosaic virus on *Agropyron*, 2049.
— — — on *A. repens*, 2755.
— — — on barley, see Barley.
— — — on *Bromus*, *Datura metel*, *D. stramonium*, and *Lolium*, 2049.
— — — on maize, 277, 3702.
— — — on oats, 2702.
— — — on pasture grasses and wheat, 288.
— *inermis*, actinomycetes, *Catenula*, *Cephalosporium acremonium*, and *Fusarium* on roots of, toxicity and virulence of, 663.
— —, *Fusarium acuminatum* and *F. moniliforme* var. *lactis* on, causing root rot, 663; toxicity and virulence of, 663.
— —, — *nivale* var. *majus* on, effect of extracts of, on germination of wheat, 663; toxicity and virulence of, 663.
— —, — *oxysporum* f.sp. *lini* and *F. sambucinum* var. *minus* on, causing root rot, toxicity and virulence of, 663.
— —, — *solani* on, 663.
— —, *Gibberella cyanea* on, causing root rot, toxicity and virulence of, 663.
— —, *Leptosphaeria nodorum* and *Penicillium* on roots of, toxicity and virulence of, 663.
— *racemosus*, *Bromus* mosaic virus can infect, 2755.
Brooksia tropicalis, redescription of, 1228b.
Broussonetia papyrifera, *Fusarium solani* on, in U.S.A., 3218.
Browallia, *Anthurium andraeanum* virus on, transmission of, by sap, 1854c.
Brussels sprouts (*Brassica oleracea*), internal browning, Ca nutrition in relation to, 781.
— —, *Leptosphaeria maculans* on, control, 2594g.
— —, *Verticillium dahliae* on, 2747.
Bryonia dioica mosaic virus on *Bryonia dioica*, distinct from other viruses on Cucurbitaceae, inhibition by sap and transmission of mechanically, 1492m.
BTT, effect of on growth of phytopathogenic bacteria, 2965.
Buddleia davidii mosaic virus in Germany, (?)str. of cucumber mosaic virus, 1013.
Bulb and corm production, reprint of 5th edition of Min.Agric.Bulletin on, 2240.
Bursera delpechiana, *Cerospora* on, effect of on, 399.
Buxus see Box.
Byssochlamys nivea, growth of in carbon dioxide atmospheres, 3666.

Cabbage (*Brassica oleracea*), *Alternaria brassicicola* on, transmission of, by slugs, 783.
— black ring spot virus, associated with *Verbascum thapsiforme* mosaic virus, 3533.
— — — — —, method for preparing antiserum for, 2868.
— — — — — on cauliflower, 2868.
— — — — — on *Impatiens parviflora*, 3707.
—, *Botrytis cinerea* on, 1372; breeding against, 1847h; genetics of, 1847h; mechanism of activation of peroxidase in infected tissue of immune plants, 784.
[Cabbage], *Corticium solani* on, control, 782.
—, *Fusarium* on, factors affecting, 921.
—, — *oxysporum* on, in U.S.S.R., 3254; cross-protection in ff.sp. of, 2210.
—, — — f.sp. *conglutinans* on, immunity to, 3387.
—, *Leptosphaeria maculans* on, in U.S.A., intercepted from Australia, 3255; U.S.S.R., 467, 3388; control, 3255; factors affecting, 467; method for ascertaining degree of infection of seed of, 5j.
—, *Macrophomina phaseoli* on, control, 782.
—, *Moniliopsis aderholdii* on, effect of trichodermin-3 on, 1877.
—, *Peronospora parasitica* on, in England, 2594; control, 2594a; factors affecting penetration of cotyledons by, 2594a; genetics of resistance to races of, 2126.
—, *Plasmodiophora brassicae* on, in U.S.S.R., 573b; control, 1373b, 2869; effect of host and non-host plants and plant residues on germination of spores of, 1373a; of, on biochemical composition of, 573f; factors affecting, 573b; ultrastructural study on host-parasite relations of, 3256.
—, *Pythium* on, factors affecting, 921.
—, — *aphanidermatum* on, control, 782.
—, *Rhizoctonia* on, factors affecting, 921.
—, — *aderholdii* on, in U.S.S.R., 573b.
— tipburn, cellular disorders in, 2336.
—, turnip yellow mosaic virus on, replication of, 1492t.
Cabbage, Chinese (*Brassica pekinensis*), *Erwinia aroideae* on, detection of, 3321.
—, —, *Plasmodiophora brassicae* on, var. react. to, 2335.
—, —, turnip crinkle virus on, technique for isolating, 1495.
—, —, — yellow mosaic virus on, 915; distribution of, 3193; replication of, 1492s; technique for isolating, 1495.
Cacao (*Theobroma cacao*), B deficiency in, in Ecuador, 1912, 3392.
—, *Calonectria rigidiuscula* on, biologic specialisation in, 3391; effect of B, N, and K on gall growth, 2599f.
—, *Colletotrichum* on, pathogenicity of, 1519f.
— diseases, distribution of and legislation against, 2412.
—, *Fusarium roseum* on, penetration of, 1519g.
—, *Glomerella cingulata* on, control, 1519e.
— greenpoint gall, association of, with *Fusarium*, 3039.
—, *Monilia roreri* on, control, 2599e; effect of cultural practices on reducing incidence of, 2671.
— mottle leaf virus on *Adansonia digitata*, 1952.
— — — — on *Cola gigantea* and *Theobroma grandiflora*, 85b.
— nutritional disorders in Sabah, symptoms of, 2674.
—, *Phytophthora* on, control, 1519c; soil treatments ineffective against, 1519b.
—, — *palmivora* on, in the Ivory Coast, 2673; comparison of methods of evaluating fungicides against, 1521; control, 86, 1519e; effect of CO_2 and air humidity on incidence of, 2672; factors affecting resistance to, 1519a; factors affecting use of Cu sprays against, 1522; resistance to, 1520, 2673; review article on, p. 225; role of chlamydospores in pod infection and survival of, in soil, 1519d; var. react. to, 1520.

[Cacao] swollen shoot virus on *Adansonia digitata*, 85b.
— — — — on cacao in Ghana, 1952; properties and purification of, 85a, 3038.
— — — — on *Ceiba pentandra*, 1952.
— — — — on *Cola chlamydantha*, 85b, 1952.
— trunk disorder in Ghana, 85c.
— virus diseases, incidence, mode of transmission and symptoms of, 2e.
Cactus, *Coniothyrium opuntiae*, *Diplodia opuntiae*, *Fusarium*, *Gloeosporium opuntiae*, and *Phytophthora cactorum* on, in Rumania, symptoms of, 2037.
— virus X, studies on protein spindles of, with fluorescent antibodies, 2242.
Cadmium against *Corticium fuciforme* on *Festuca*, 2052.
— acetate against *Coryneum foliicola* on apple, 1291; *Ctenomyces* and soil microorganisms on woollen textiles, 3658.
— chloride against *Coryneum foliicola* on apple, 1291.
Cajanus cajan, see Pigeon pea.
Calamondin, *Alternaria citri* on, in Queensland, 999.
Calcium against lettuce tipburn, 3610.
— deficiency, effect of, on resistance of chicory to *Sclerotinia minor*, 3611.
— — in avocado pear, 3149; strawberry, 3145; vine, 2931c; wheat, 1970.
—, effect of P on content of, in cotton, 625; on local lesion formation by sunnhemp mosaic virus on *Cyamopsis psoraloides*, 3604.
—, relationship of, to internal browning in Brussels sprouts, 781.
— toxicity in vine, 2931c.
— in combination against *Lophodermium macrosporum* on spruce, 1131.
— cyanamide, effect of, on *Cochliobolus carbonum* and *C. heterostrophus* on maize, 2370a,b; on fungi, 2371; on *Spilocaea oleagina*, 2370a.
— nitrate, effect of on apple bitter pit, 1653; on *Corticium solani* on tomato, 436a.
— polysulphide against *Phyllactinia suffulta* on mulberry, 1112; *Taphrina deformans* on peach, 2777.
— sorbate, effect of on *Fusarium oxysporum* f.sp. *vasinfectum* on cotton, 1271.
Calendula officinalis, *Sphaerotheca fuliginea* can infect, 1604.
Callistemon, *Cylindrocladium floridanum* on, 2468.
Callistephus chinensis, see Aster.
Calo-clor against *Sclerotinia homoeocarpa* on *Agrostis palustris* and *A. tenuis*, 1284.
— as soil disinfectant, 1632.
Calomel, see Mercurous chloride.
Calonectria crotalariae on *Crotalaria spectabilis*, *Eucalyptus*, and groundnut, 1159.
— *nivalis* on barley, 3062.
— — on rye, 3079.
— —, see also *Griphosphaeria nivalis*.
— *rigidiuscula* on cacao, 2599f, 3391.
Calvatia craniformis on *Liquidambar styraciflua* forming mycorrhiza, 1891.
Camellia sinensis, see Tea.
Campaigns against hunger, book on, 3641.
Campanula, *Coleosporium campanulae* on, in Hungary, 1115.
Camphor (*Cinnamomum camphora*), *Macrophoma georgica* can infect, 656.
Candida intermedia, control, 2970.
**Canna*, cucumber mosaic virus on, in U.S identification of, and transmission of vectors, 1014.
Cantaloupe (*Cucumis melo* var. *cantaloupi Cladosporium cucumerinum* on, effect crop rotation on, 2919.
—, muskmelon necrotic spot virus on, in Jap 213.
Cantharellus cibarius on *Liquidambar styrac* forming mycorrhiza, 1891.
**Capsicum*, *Botryosporium palmicolum* on India, 828.
—, *Botrytis cinerea* on, in Austria, 1241.
*—, *Cercospora unamunoi* on, in Italy, *Bot yuae* associated with, 2583.
—, *Colletotrichum capsici* on, in India, wintering of, 1830.
—, — *coccodes* on, in Hungary, morphol physiology, and symptoms of, 3207.
—, — *phomoides* on, in the Philippines,
—, cucumber mosaic virus on, in France 2596; in Israel, 2350; breeding against effect of aphids on occurrence and mission of, 2925; of, on fruit and seed, on yield of different times of infectio 2581; susceptibility to, 1828; symptom on fruit and seed, 1827; transmission o vectors, 1500; var. react. to, 2350.
—, *Erwinia carotovora* on, in U.S.A., 11
—, *Geotrichum candidum* on, relation be pH and susceptibility to, 876.
—, *Helminthosporium tetramera* on, in symptoms of, 2351.
— mosaic virus on *Capsicum* in Denmark, 1
—, *Phytophthora* on, in Sarawak, 2358a; logy of, 3359; tentatively classified a *drechsleri*, 3359; transmission of by ve 2358a.
—, — *capsici* on, in France, 509, 2596; b ing against, 509; control, 829; genetics of,
—, potato virus Y on, in Israel, 2350; d ences in virulence of strs. of, 2926; ge of, 3616; resistance to, 3303, 3616; t mission of mechanically and by ve 2926; var. react. to, 1504, 2350.
—, — — — strs. on, isolation and mainte of, 2582; study on, 1688.
—, — — — str. C not infecting, 408.
—, — — — mild str. on, var. react. to, 1
—, *Pseudomonas solanacearum* on, in G 1941.
—, *Stemphylium botryosum* on, 2600h.
—, stolbur virus on, 717; in U.S.S.R., s toms of, 830.
—, tobacco etch virus on, effect of, on, var. react. to, 1504.
—, — mosaic virus on, in France, 509, breeding against, 509; effect on yie different times of infection by, 2581; fruit and seed, 1827; resistance to, susceptibility to, 1828; symptoms of, var. react. to, 1828.
—, — — — str. on, designated 'CPO', s toms of, 217.
—, — — — tomato str. on, in Den tomato aspermy virus and tobacco virus sometimes associated with, 182
—, — rattle virus on, in U.S.A., 827; effe symptoms of, on fruit and seed, properties and purification of, 827.
—, tomato aspermy virus and tomato b top virus on, effect and symptoms fruit and seed, 1827.

Capsicum], *Uromyces appendiculatus* on, effect of, on respiration of, 1462.
—, *Verticillium alboatrum* on, in U.S.S.R., symptoms of, 830.
— virus diseases, 838; in Israel, 2350; inclusions in cytoplasm of, 79.
—, *Xanthomonas vesicatoria* on, effect of growth-regulating and other compounds on, 1832; of temperature on development of, 521; of time in culture on carbohydrate utilization by, 1183; multiplication of, 831; serological differences between isolate on tomato and, 3644; var. react. to, 831.
captan, adaptation of *Venturia inaequalis* to, 2461.
— against *Ascochyta tarda* on coffee, 1264; *Botrytis cinerea* on lettuce, 26; strawberry, 1673, 2369t, 2479; diseases of cactus, 2037; of stored fruit, 3484; *Fusarium oxysporum* f.sp. *tuberosi* on stored potato, 402a; *Hapalosphaeria deformans* on raspberry, 3311c; *Marssonina* on poplar, 451; *Penicillium oxalicum* on maize, 117; *Pezicula alba* on apple, 2058a; *Phytophthora nicotianae* var. *parasitica* on citrus, 3433; plant diseases, 1176d; *Plasmopara viticola*, 835; *Pleospora bjoerlingii* and *Pythium ultimum* on beet, 182; *Sclerotinia* on apple, 2460; *S. laxa* on cherry, 2474; storage disorders of apple, 1652; *Venturia inaequalis*, 373, 1032d, 1176f,j, 1649, 2369b, 2940e, 3128, 3129.
— as seed treatment for cabbage, 782; cereals, 89; flax, 638; as soil disinfectant, 550a, 782.
—, effect of, on *Alternaria solani* on tomato, 13e; on *Botrytis cinerea*, 26; on *Claviceps microcephala* on *Pennisetum typhoideum*, 2709; conidia of *Neurospora crassa*, 2969; on *Corticium solani*-infected potato, 1180a; on flavour of canned strawberry, 2369t; on growth of phytopathogenic bacteria, 2965; on pollen germination and fruit yield of cranberry, 1669; on *Venturia pirina*, 2270.
—, estimation of 'blocking' power of, on *Plasmopara viticola* on vine, 1400a,b.
—, redistribution of, by rainfall, 3128.
—, residues of, on grapes and strawberry, estimation of, 27.
—, tenacity of, on leaf surfaces, 3327.
— versus Cu, 1032b; daconil-2787, 2369b.
— analogues, effect of on conidia of *Oidium begoniae* var. *macrosporum* and *Uncinula necator*, 3654.
— in combination against *Glomerella cingulata* on *Vaccinium corymbosum*, 2477; *Plasmopara viticola* on vine, 2155; *Podosphaera leucotricha*, 374, 1650, 2264, 3129; *Sclerotinia fuckeliana* and *Uncinula necator* on vine, 2155; *Venturia inaequalis*, 1032e, 2263, 3129; as seed treatment for beet, 184; for cotton, 3457; for wheat, 2600b.
— — —, effect of on bolting of beet, 2872.
— — —, toxicity of to apple, 2264.
— — — versus chloroneb, 3457.
— 50W against groundnut collar rot, 1386a.
— 50WP in combination against *Erysiphe polygoni* on bean, 794.
— 75 in combination against *Ustilago nuda* on barley, 104.
Carbadin against *Plasmopara viticola*, 2156; as corm treatment for *Gladiolus*, 651; as soil disinfectant, 3070.
— in combination against *Plasmopara viticola*, 2156.
Carbamine against *Peronospora tabacina*, 2520.
Carbathion against root rots of cucumber, 842a.
— as soil disinfectant, 676, 2327b.
Carbolineum as wound treatment for pomegranate, 395.
Carbon, effect of, on growth of *Monochaetia indica* on loquat and *Pestalotia theae* on tea, 1456a.
—, radioactive, distribution of, in potato infected with *Phytophthora infestans*, 415.
— dioxide, effect of, on growth and sporulation of *Chaetomium globosum*, 46a; on incidence of *Phytophthora palmivora* on cacao, 2672.
— —, production, as indication of timber decay, 3247.
— — in combination, effect of, on *Venturia inaequalis*, 1290.
— disulphide against *Armillaria mellea* on oak, 2838.
Carbonate, basic, in combination against *Taphrina deformans* on peach, 2777.
Cardaria draba, tobacco mosaic virus str. on, in Czechoslovakia, 1605.
**Cardiospermum helicocibrum*, *Cercospora cardiospermi* on, in Mauritius, 2943c.
Carex subpediformis, *Claviceps* on, in China, 1214b.
**Carica*, *Oidium caricae* on, in Rumania, 3693.
— *papaya*, see Papaw.
*Carnation (*Dianthus caryophyllus*), *Alternaria dianthicola* on, in Spain, 2243.
—, *Erwinia chrysanthemi* strs. on, hosts, pathogenicity and symptoms of, 2600d.
—, *Fusarium oxysporum* ff.sp. on, cross-protection in, 2210.
— mottle virus on carnation, detection of, 1175h; differentiation in strains of, 646.
—, *Phytophthora nicotianae* var. *parasitica* on, in France, morphology and symptoms of, 647.
*—, *Pseudomonas caryophylli* on, in Italy, symptoms of, 3461.
—, (?)— *woodsii* on, in Italy, 1607.
—, *Uromyces dianthi* on, effect of phelam DP on, 2172.
—, *Verticillium cinerescens* of, effect of soil treatment on, 1175c; effect of temp. on, 1175b,c; review of control, economics, spread, and symptoms of, 1273; spread of, 230i, 1175c.
— virus diseases, production of virus-free material by meristem culture, 2741.
Carpophilus transmitting *Penicillium digitatum*, 3441.
Carrot (*Daucus carota*), actinomycetes in rhizosphere of, in U.S.S.R., 61b.
—, *Alternaria dauci* on, in India, 82; control, 493.
—, — *umbellifericola* on, 1305.
—, *Aspergillus* on stored seed of, factors affecting, 2551.
— cavity spot in Great Britain, symptoms of, 3295.
—, *Cercospora carotae* on, genetics of resistance to, 494.
—, *Chalaropsis thielavioides* on, in Norway, (?)imported from the Netherlands, 2574; *N. Ireland, 4f.
— clayburn, symptoms of, 3295.
—, *Colletotrichum coccodes* and *C. dematium* on, 186.
—, *Erwinia aroideae* on, immunofluorescent staining for identification of, 3321.

[Carrot], *Erysiphe umbelliferarum* on, control, 493.
— 'five o'clock shadow' in England and Scotland, 3295.
—, *Mucor* on stored seed of, factors affecting, 2551.
—, parsnip mosaic virus on, 3311h.
—, *Penicillium* and *Pseudomonas* on stored seed of, factors affecting, 2551.
—, *Sclerotinia sclerotiorum* on, effect of phytoncides on resistance to, 80f, 466.
—, *Stemphylium radicinum* on, in Germany, 1160; *Fusarium* associated with, incidence and spread of, 1810.
Carthamus, *Verticillium alboatrum* on, spec. react. to, 3529b.
— *tinctorius*, see Safflower.
Carum, *Alternaria poonensis* on, 1305.
— *opticum*, *Alternaria umbellifericola* on, 1305.
Carya pecan, see Pecan.
Caryophyllales, tobacco mosaic virus on, react. to, 3015.
*Cassava (*Manihot utilissima*), *Cercospora caribaea* on, in Somalia, morphology and symptoms of, 1171.
—, — *henningsii* on, in Gabon, 1941.
—, *Glomerella cingulata* on, in Gabon, 1941; review of, 1833.
*—, *Phomopsis manihotis* on, in India, description of, 64.
— virus diseases, effect of heat treatment on, 2941b; incidence, mode of transmission and symptoms of, 2e.
Cassia occidentalis, *Cymbidium* mosaic virus and tobacco mosaic virus orchid str. on, 2206.
— *siamea*, *Cercospora cassiae* and *Oidium* on, in Tanzania, 1745e.
*— *tora*, *Sclerotium rolfsii* on, in India, 2669.
Castanea, see Chestnut.
Castor, see *Ricinus communis*.
Casuarina, *Phomopsis casuarinae* on, spec. react. to, 2319.
**Catalpa bignonioides*, *Phyllosticta catalpae* on, in Czechoslovakia, 1011.
Cattleya, *Cymbidium* mosaic virus on, detection of, 648.
—, tobacco mosaic virus orchid str. on, flower break caused by, 2206.
Cauliflower (*Brassica oleracea*), cabbage black ring spot virus on, diagnosis of, 2868.
—, Mn deficiency in, soil fumigation with dichloropropenes causing, 3592.
—, — toxicity in, 1911.
— mosaic virus on cauliflower in S. Australia, epidemiology of, 2337; morphology of, 3253; transmission of, by vectors, 2337.
—, *Peronospora parasitica* on, appressorium formation in, 3638.
—, *Pestalotia brassicicola* on, production of endoconidia by, 3257.
*—, *Pseudomonas maculicola* on, in New Zealand, 2338.
Cavariella aegopodii transmitting *Anthriscus* yellows virus and parsnip mosaic virus, 3311g,h.
— *theobaldi* transmitting parsnip mosaic virus, 3311h.
CDNP against *Erysiphe polygoni* on bean, 3634a.
Cedrus deodara, see Deodar.
Ceiba pentandra, cacao swollen shoot virus on, in Ghana, 1952.
Celeriac, see Celery.
Celery (*Apium graveolens*), *Arabis* mosaic virus on, symptoms of, 2594d.
—, aster yellows virus on, 3023.
*—, *Cercospora apii* on, in Sarawak, 2358; comparison of, with *Septoria apiicola*, 49; control, 495.
—, cucumber mosaic virus on, symptoms of, 2594d.
*—, *Entyloma helosciadii* on, in Sarawak, 2358d.
— latent virus on celery in Italy, 1811; description of, non-transmission of by vector, transmission of by sap, 1162.
— (?)mosaic virus on celery in Germany, transmission of mechanically and by vector to Umbelliferae, 1811.
*—, ozone injury to, in U.S.A., 1163.
—, *Phoma apiicola* on, in U.S.A., effect of crop rotation on, 2914.
—, *Septoria* on, control, 838, 2594h.
—, — *apiicola* on, comparison of *Cercospora apii* with, 495; control, 495, 2913.
— strap leaf, relationship of unidentified viruses in sap to, 2594d.
—, *Trichoderma viride* on, *Pratylenchus penetrans* in relation to, 892.
— western mosaic virus on celery in U.S.A., host range of, transmission of by aphids and mechanically, 2912.
Cells and tissues in culture, vol. 3, Methods, biology and physiology, 2166.
Cenangium singulare on pine, 769.
Cenococcum graniforme in soil, 37.
— — on *Abies pindrow* forming mycorrhiza, 1440.
— — on *A. religiosa* forming mycorrhiza, 37.
— — on deodar forming mycorrhiza, 1440.
— — on *Liquidambar styraciflua* forming mycorrhiza, 1891.
— — on oak forming mycorrhiza, 37.
— — on pine and spruce, forming mycorrhiza, 1440.
**Centaurea cyanus* and **C. imperialis*, *Leveillula taurica* on, in India, 1015.
Centrospora acerina on *Primula malacoides*, ...
Cephaleuros parasiticus on tea, 1722.
Cephalosporium acremonium on *Bromus inermis* roots, 663.
*— — on maize, 3632b.
— *coremioides*, effect of, on growth of tomato, 2106.
— *gregatum* on clover and *Phaseolus aureus*, 3634j.
— — on soybean, see Soybean.
— *lecanii*, culture of, 1425.
— *longisporum*, glutamic acid synthesis, 3337a.
— *maydis* on maize, 982.
Cerasus avium, *Pseudomonas syringae* on, in Poland, symptoms of, 1176g.
Ceratitis capitata, associated with *Penicillium digitatum* on citrus, 3441.
Ceratobasidium, taxonomy of, 2194.
— *cornigerum*, mycelia from *Rhizoctonia goyerae-repentis* on *Goodyera repens* identical as, 10e.
Ceratocystis, basidiomycetes on, necrotrophic mycoparasites of, 2360.
— *coerulescens*, asexual nuclear behaviour, 1924.
— — on pine, 1355.

[*Ceratocystis*] *fagacearum*, asexual nuclear behaviour of, 1924.
— —, motility of nuclei of, 3362.
— —, on oak, see Oak.
— —, vegetative nuclear division in, 1751.
— —, xylem sap as medium for, 443.
— *fimbriata*, inheritance of sexuality, colour, and colony type in, 2640b.
— — on aspen and birch, 2531.
— — on *Hevea* rubber, 3183a.
— — on mango, 2080.
— — on pine, 769.
— — on sweet potato, see Sweet potato.
— —, origin of self-sterile strs. in, 2640a.
— *montia* on pine, 3586.
— *paradoxa* on coconut and oil palm, 3389.
— — on sugarcane, 1710d, *2507.
— *piceae* on pine, 1355.
— *ulmi* on elm, see Elm.
— —, xylem sap as medium for, 443.
Ceratophorum setosum on lupin, 1030.
Ceratostoma geranii associated with dieback of *Pelargonium capitatum*, 1678.
Cercospora abelmoschi on *Hibiscus esculentus*, 1941.
*— *angraeci* on *Angraecum veitchii*, 3635a.
— *apii* on celery, 495, *2358d.
— *beticola* on beet, see Beet.
— *bougainvilleae* on *Bougainvillea*, 267.
— *bunchosiae* on *Malpighia glabra*, 393.
*— *cardiospermi* on *Cardiospermum helicocibrum*, 2943c.
*— *caribaea* on cassava, 1171.
— *carotae* on carrot, 494.
— *cassiae* on *Cassia siamea*, 1745e.
— *citri-grisea* on citrus, 327.
— *coffeicola* on coffee, see Coffee.
— *concors* on potato, 1846, 2943b.
— *digitalidis* on *Digitalis lanata*, 1063.
— *gigantea*, hosts of, 2945h.
*— *gossypina* on cotton, 2027.
— *hayi* on banana, 1052.
— *henningsii* on cassava, 1941.
— *ipomoea*, paper on, 1853.
*— *jamaicensis* on *Datura stramonium*, 346.
— *jasminicola*, effect of *Streptomyces griseus* on, 1853.
— — on jasmine, 3465.
— *kikuchii* on soybean, 1156, 1803, *3283.
— *koepkei* on sugarcane, 1710a.
— *longipes* on sugarcane, 2100a.
*— *longissima* on lettuce, 499.
— *microsora* on *Tilia*, 763.
— *nicotianae* on tobacco, *1736, 2512.
— *pini-densiflorae* on pine, 1745c.
— *riachueli* on vine, 2935.
— *rosleri* on vine, 2587.
— *sesami* on sesame, 1854d, *2358d.
— *sojina* on soybean, 198, 200.
*— *timorensis* on sweet potato, 2358d.
*— *tinosporae* on *Tinospora cordifolia*, 3160.
*— *unamunoi* on *Capsicum*, 2583.
— *viticola* on vine, 2935.
— *vitiphylla* on vine, 2587.
— *vitis* on vine, 2935.
Cercosporella herpotrichoides in soil, 553, 927, 1218.
— — on barley, see Barley.
— — on cereals, 102, 1955, 2356.
— — on grasses, 508b.
— — on oats, 926, 1542, 1955.
— — on rye, see Rye.
— — on wheat, see Wheat.
[*Cercosporella herpotrichoides*], respiratory metabolism of, 1246.
— —, sporulation in pure culture and from stromata of, 2420.
Cercosporin, isolation of, from *Mycosphaerella berkeleyi* on groundnut, 3285.
Cereals, *Anthoxanthum* mosaic virus on, 3310d.
—, *Aspergillus flavus* on, production of aflatoxin by, 1455.
—, aster yellows virus on, in Finland, transmission of, by vectors, 1953.
—, barley yellow dwarf virus on, in Canada, transmission of, by vectors, 3395.
—, *Cercosporella herpotrichoides* on, in Austria, 2356; the Netherlands, 102; factors affecting, 2356.
—, *Claviceps purpurea* on, leaflet on, 3075.
— diseases in England, 230c; U.S.S.R., 574; atlas of, 3393; control, 574, 2676; economic importance and incidence of, 230a; incidence of soil borne, 230c; morphology and symptoms of, 574.
—, *Erysiphe graminis* on, in Austria, 2356; effect of changes in host metabolism on incidence of and effect of on yield, 2382; factors affecting, 2356.
—, fungi on stored, incidence and physiology of, 1975.
—, *Fusarium* on, transmission of, by seed, 230b.
—, *Gibberella zeae* on, factors affecting toxicity of to cattle, 11g.
—, *Griphosphaeria nivalis* on, in Austria, 7; Germany, 5b; U.S.S.R., 1513a; control, 1513a; factors affecting, 7, 1513a; technique for detecting in seed, 581; use of polyethylene sheeting for testing disinfectants against, 5b.
—, moulds on, control, 89.
—, *Puccinia graminis* on, in Austria, 2356; Rumania, 582; biochemical features of, 2209; factors affecting, 2356; migration of uredospores of, 582.
—, — *recondita* and *P. striiformis* on, in Rumania, migration of uredospores of, 582.
—, *Pyrenophora semeniperda* on, *Drechslera verticillata* proposed as name of hyphomycetous state of, 925.
—, *Sclerotinia borealis* on, in Finland, 3469; U.S.S.R., 1513a; control, 1513a, 3469; factors affecting, 1513a; geographical distribution of, 3469.
—, soil-borne viruses on, purification of, 11h.
—, *Ustilago* on, in Austria, 2356.
—, — *nuda* on, intraspecific variability in, 2209.
—, virus diseases of, in U.S.S.R., 1513w; control, 1928, review article on, p. 401.
Ceresan against *Cercospora jasminicola* on jasmine, 3465; *Sclerotinia convoluta* on *Iris*, 1614; as seed treatment for barley, 1987.
—, effect of, on viability of wheat seed, 3066.
— B against *Pyricularia oryzae*, 235k.
— M against groundnut collar rot, 1386a.
—, new improved, as seed treatment for barley, 1987.
— — —, ineffective as seed treatment for wheat, 591.
Cerotelium fici on fig, 3151.
Chaetomium alba-arenulum on timber, 1363.
— *globosum*, decomposition of methyl cellulose by, 551.
— —, effect of ammonium tartrate on growth and sporulation of, 46b; of CO_2 on growth

and sporulation of, 46a; of volatile fungal metabolites on growth and sporulation of, 49.
[*Chaetomium globosum*] in soil, 1362, 2184b.
— — on timber, 175, 1363.
Chalaropsis thielavioides on carrot, *4f, 2574.
Chamaecyparis, Phytophthora lateralis on, apparatus for producing zoospores of, 3012.
*— *lawsoniana, Didymascella thujina* on, in Germany, specialization of, 2117.
— —, *Phytophthora* on, 3111.
Chemagro, effect of, on soil micro-organisms, 1468.
Chemotherapy against plant diseases, review of, 1431.
Chenopodiaceae, *Malva* vein clearing virus can infect, 1502.
—, *Robinia* mosaic virus can infect, 1346.
Chenopodiales, tobacco mosaic virus on, reaction to, 3015.
Chenopodium, apple stem grooving virus can infect, 3488.
—, broad bean mosaic virus can infect, 1492p.
—, groundnut rosette virus can infect, 805.
— mosaic virus, apple latent virus 2 identical with, 3022.
— — — on *Chenopodium amaranticolor*, 2408, 3705.
— — — on *C. quinoa*, 3705.
— — —, study on, in plant cells, 2653.
—, non-transmission of oak virus by sap to, 447.
—, *Robinia pseudoacacia* mosaic virus on, 2844.
— star mottle virus on *Chenopodium*, electron microscopy of, 12n.
— *album*, beet leaf curl virus can infect, 1135.
— —, inhibition of tobacco mosaic virus by juice from, 2664.
— —, lucerne mosaic virus on, in Queensland, 1238; U.S.S.R., 1142.
— —, potato virus, unknown, can infect, 1073.
— —, — — X on, in U.S.S.R., 404.
— *amaranticolor, Arabis* mosaic virus on, transmission of by vectors to soybean, 2932.
— — as indicator for *Arabis* mosaic virus, 380; bean yellow mosaic virus, 667; bean yellow mosaic virus str., 1640; pear green ring mosaic virus, 2268.
— —, *Chenopodium* mosaic virus on, biological and biochemical characterization of, 2408; identification of, 3705.
— —, cherry (sweet) virus in Rumania can infect, 380.
— —, cucumber mosaic virus on, effect of nutrition of, on infection by, 3706.
— —, cucurbit latent virus on, in U.S.A., 2159j.
— —, effect of potato mop-top and spraing viruses on, 409.
— —, pea seed-borne mosaic virus on, 2560.
— —, red clover mottle virus can infect, 141.
— —, rhubarb virus can infect, 2161l.
— — star mottle virus on *C. amaranticolor*, characterization and purification of, 12m; transmission of, by seed, 12m.
— —, tobacco mosaic virus str. pp on, symptoms of, 3540.
— —, vine fanleaf virus on, 1854h, 3624.
— —, watermelon mosaic virus 2 on, in U.S.A., 2159j; symptomless host of, 2159j.
— *ambrosioides, Cercospora coffeicola* on, 2023c.
*[*Chenopodium ambrosioides*], pea mosaic virus on, in Czechoslovakia, 1940.
— —, vine fanleaf virus can infect, 3624.
— *capitatum*, beet mild yellowing virus on, 181.
— *foetidum*, hop virus on, 2082.
— *foliosum*, beet mild yellowing virus on, 181.
— *giganteum*, pea mosaic virus on, in Czechoslovakia, 1940.
— *murale*, as indicator for *Bromus* mosaic virus, 2049.
— —, beet leaf curl virus can infect, 1135.
— —, *Bromus* mosaic virus on, multiplication of, 2422a.
— —, cherry leaf roll virus on, detection of, 692.
— —, hop virus on, 397, 2082.
— —, pea mosaic virus on, in Czechoslovakia, 1940.
— *polyspermum*, beet mild yellowing virus on, 181.
— *quinoa* as indicator for *Bromus* mosaic virus, 2049; potato viruses, 5f; raspberry viruses, 383; vine viruses, 1398.
— —, beet leaf curl virus can infect, 1135.
— —, *Bromus* mosaic virus on, multiplication of, 2422a.
— —, lettuce mosaic virus on, transmission of, by vectors, 1933.
— —, not susceptible to ?new vine mosaic virus, 1492g.
— —, pear green ring mosaic and pear vein yellows viruses on, similarity of, to apple chlorotic leaf spot virus, types of lesions produced by, 2268.
— —, potato virus Y on, local lesion assay host for serological strs. of, 1314a.
— —, red clover mottle virus can infect, 141.
— —, sowbane mosaic virus on, identification of, 3705.
Cherry (*Prunus avium* and *P. cerasus*), apple chlorotic leaf spot virus on, in Poland, 1644a.
—, *Arabis* mosaic virus on, associated with decline, 380.
—, (?)*Aureobasidium pullulans* on, in Germany, symptoms of, 2457a.
—, *Blumeriella jaapii* on, in Germany, 1045; Hungary, 375; Latvian S.S.R., 1849c; U.S.S.R., 3508; control, 375, 1045, 2173, 2771, 3508; factors affecting, 3508; overwintering of, 375.
—, cucumber mosaic virus on, transmission of, by vectors, 2204.
— diseases, tables of fungicides against, 2171.
— green ring mottle virus on peach, 2274.
— Lambert mottle virus on cherry, factors affecting symptom development of, 2278.
— leaf roll virus on *Chenopodium murale*, 692.
— — — — on cherry, isolate serologically distinct from rhubarb isolate, 3302; detection and identification of, 692; effect of ultrasonic treatment on infectivity of, 2594f; *Sambucus nigra* 'Aurea' virus not serologically related to, 3634d.
— — — — on *Commelina coelestis* and herbaceous plants, 77.
— — — — on *Nicotiana megalosiphon*, 692.
— — — — on rhubarb, 3302.
— — — — on *Sambucus nigra, S. racemosa* and tobacco, 77.
— little cherry virus on cherry in Poland, 1644.
— necrotic ring spot virus, (?)apricot gummosis virus str. of, 1042.
— — — — —, rose streak virus not related to, 1623.

[Cherry necrotic ring spot virus], serology of, 3634c.
— — — — — on cherry, peach, and plum, 5k.
— — — — — on rose, 1019.
— — — — —, see also Peach necrotic ring spot virus, and *Prunus* necrotic ring spot virus.
—, pear stony pit virus can infect, 2161h.
— Pfeffinger disease in Switzerland, 1668; historical account of spread of, 2652a; raspberry ring spot virus str. on currant in Germany related to, 1668.
— — —, see also Cherry rasp leaf virus.
—, *Podosphaera clandestina* on, in Canada, 3384.
—, — *oxyacanthae* on, control, 2173.
—, prune dwarf virus on, 5k; in *New S. Wales, latent infection in, 3507.
—, *Prunus* necrotic ring spot virus on, serological diagnosis of, 2778.
—, *Pseudomonas* on, in England, 2354c.
—, — *mors-prunorum* on, 1422; in Italy, 381; growth of, 1423; study on, 381; technique for testing bactericides against, 2280.
—, — *syringae* on, in Germany, 1045; Poland, 1176g; control, 1045; factors affecting, 1176g; symptoms of, 1176g.
— rasp leaf virus on cherry in U.S.A., survival of, in soil, 2159g.
—, raspberry ring spot virus str. on, symptoms of, 1668.
—, *Sambucus nigra* 'Aurea' virus can infect, 3634d.
*—, *Sclerotinia fructicola* on, in Japan, hosts of, 2475.
—, — *fructigena* on, in Rumania, 2474; penetration by, 2279. 2457c.
—, — *laxa* on, in Rumania, control, 2474; penetration by, 2279, 2457c.
— Stecklenberger [peach ring spot virus str.] on, in Poland, 1644a.
— tatter leaf virus on cherry in India, 671; Poland, 1644a; transmission of mechanically to squash, 671.
— — — — on peach, 671.
—, *Valsa* not infecting, 5l.
—, *Verticillium dahliae* on, isolation of, from buds and pedicels, 1660.
— virus disease on cherry in Rumania, effect of, on, serological detection of, 380.
— — diseases in France, 234; control, 3018; detection of, in seeds, 379; economic importance of, 3108; non-transmission of by seed, 1042.
— yellows virus on cherry in Poland, 1644.
— — — on peach, 2274.
— laurel (*Prunus laurocerasus*), *Macrophoma georgica* can infect, 656.
Cherry-plum, see *Prunus cerasifera*.
Chestnut (*Castanea*), *Microsphaera penicillata* on, in U.S.S.R., 1337.
Chick pea, see *Cicer arietinum*.
Chicory (*Cichorium intybus*), *Alternaria dauci* f.sp. *endiviae* on, susceptibility of, to artificial seed contamination, 1812.
—, immunity of, to *Erwinia carotovora*, 816.
*—, *Phytophthora cryptogea* on, in France, identification of, 211.
—, *Rhizopus stolonifer* on, in India, 2144.
—, *Sclerotinia minor* on, effect of Ca deficiency on resistance to, 3611.
Chilli, see *Capsicum*.
China aster, see Aster.
Chinosol against *Botrytis cinerea* on vine, 2157.
Chionaspis austriaca (?) transmitting pine virus disease, 2851.
Chitin as substrate for soil fungi, 263.
Chloramphenicol against *Xanthomonas oryzae* on rice, 235k.
—, assimilation of, in plants, 3650.
—, effect of, on infection of wheat by *Puccinia graminis*, 940.
p-chlor-*m*-cresol against fungi in air of library and museum storerooms, 35.
Chlordane against *Ophiobolus graminis* f.sp. *avenae* on *Agrostis tenuis*, 1632.
Chlorine against *Erwinia carotovora* on *Capsicum*, 1170; *Xanthomonas oryzae* on rice, 1577.
—, effect of, on resistance of peach to *Fusicoccum amygdali*, 378.
Chlormequat chloride against *Verticillium* on tomato, 525.
Chlorobenzenes against *Tilletia caries*, 3403.
Chlorocholin chloride against *Cercosporella herpotrichoides* on wheat, 5h.
— — effect of, on growth of *Rhizopus stolonifer*, 1593.
2-chloro-4-diisobutyl-6-nitrophenol, see CDNP.
2-chloroethyl trimethylammonium chloride, non-interaction of, with peach virus disease, 2069.
Chloroneb against *Ustilago striiformis* on *Poa pratensis*, 2452; as seed treatment for cotton, 3457.
— versus panogen 15, 3457.
— — captan and quintozene in combination, 3457.
2,3,5,6-chloro-l-nitrobenzene, see Tetrachlornitrobenzene.
4-chlorophenylhydrazine formate against *Pyricularia oryzae*, 531.
Chlorophos in combination against vectors of wheat dwarf virus, 955.
Chloropicrin as soil disinfectant, 888, 1158.
—, effect of, on actinomycetes and bacteria in soil, 888.
— versus DBCP, 1158.
Chloro (2-chloroethyl) trimethyl-ammonium chloride, effect of, on sporulation of *Puccinia recondita*, 944b.
Chlorphenol against *Corticium solani* and *Streptomyces scabies* on potato, 1176h.
Choanephora, use of silver nitrate for staining sporangiospores of, 3368.
— *cucurbitarum*, production of cellulolytic enzyme by, 2614.
Cholesterol, reversing inhibition of *Colletotrichum lagenarium* by nystatin, 2180.
Chrysanthemum, *Aspergillus wentii* on, yellow strapleaf symptoms produced by culture filtrate of, 2947c.
—, *Erwinia chrysanthemi* strs. on, pathogenicity and symptoms of, 2600d.
—, *Fusarium oxysporum* on, effect of N nutrition on susceptibility to, 1017.
—, *Itersonilia perplexans* on, control, 230g, 1016; effect of temp. on development of, 1175d; hosts and overwintering of, 135.
—, *Mycosphaerella ligulicola* on, in Finland, 917; distribution of, 3631; survival of, on roots of, 341.
—, *Phoma* on, 230h.
—, *Pseudomonas cichorii* on, 3116; effect of amino acids on severity of, 345.

Chrysanthemum], *Puccinia chrysanthemi* on, in U.S.S.R., 643.
—, — *horiana* on, in Switzerland, biological characteristics and control of, 2441; distribution of, 3631; hosts of, 2441; legislation against in Canada, 1201a; symptoms of, 2441.
—, *Pythium ultimum* on, effect of, on root development, 1175e.
—, *Septoria chrysanthemella* on, in Finland, 917.
*—, *Stemphylium floridanum* on, in Canada, 3384.
— stunt virus, assay of, 12x.
— virus B on *Chrysanthemum*, effect of heat treatment on, 649.
— yellow strapleaf disease in U.S.A., symptoms induced by culture filtrate of *Aspergillus wentii*, 2947c.
— *cinerariaefolium*, *Stemphylium nabarii* on, symptoms of, 344.
— *coccineum*, *Cephalosporium* sp. on, resembling *C.chrysanthemi*, 2743; pycnidia referable to *Deuterophoma*, 2743.
— *maximum*, *Alternaria chrysanthemi* on, control, 343.
— *morifolium*, *Botrytis cinerea* on, factors affecting, 342.
Chrysomyxa abietis on spruce, 1131.
— *empetri* on spruce, 158e.
— *ledi* on spruce, 158e, 1131.
— — var. *rhododendri* on spruce, 1130.
— *ledicola* on spruce, 158e.
Chrysophyllum cainito, *Botryodiplodia theobromae* on, perfect state of, 3517.
Chrysosporium lignorum on timber, 2867.
(?)Chytrid causing citrus safargali disease, 2020.
Ciborinia pseudobifrons, *C. whetzelii* compared with, 2116.
— *whetzelii* on aspen, 2116.
Cicer arietinum, *Ascochyta rabiei* on, control, 2891; evaluation of resistance to, 1384; preparation of ground for infection by, 2345; var. react. to, 2345.
— —, *Botrytis cinerea* on, in Argentina, symptoms of, 2346.
— —, *Fusarium* on, control, 2891.
— —, Leguminosae witches' broom virus on, 724.
Cichorium endivia, see Endive.
— *intybus*, see Chicory.
Cicinnobolus on Erysiphaceae, 3637.
— on *Oidium*, 14.
— *cesatii* against *Podosphaera leucotricha*, 842c.
— — in Estonia, geographical distribution of, 556.
*Cineraria (*Senecio cruentus*), **Alternaria senecionis* on, in Argentina, 2244.
—, as starch lesion assay host for chrysanthemum stunt virus, 12x.
—, *Puccinia lagenophorae* on, in N. Ireland, 4f.
Cinnamomum camphora, see Camphor.
Cinnamon (*Cinnamomum zeylanicum*), *Exosporium cinnamomi* on, in India, 1062.
Circulifer tenellus transmitting beet curly top virus strs., 2127.
Citron (*Citrus medica*) as indicator for citrus exocortis virus, 321, 322.
Citrullus vulgaris, see Watermelon.
Citrus (including all *Citrus* hosts), *Alternaria chartarum* on, morphology and symptoms of, 2232.
[Citrus, *Alternaria*] *citri* on, in Queensland, 999; effect of diphenyl + gamma radiation on, 3440; protease activity in, 1449.
—, — *[illegible]ortiale* on, morphology and symptoms of, 2232.
—, — *tenuis* on, control, morphology and symptoms of, 2232; physiologic study on, 2232.
—, — *tenuissima* on, morphology and symptoms of, 2232.
—, *Ascochyta* on, in U.S.A., 2945h.
—, *Aspergillus* and *A. foetidus* on, 3439.
— blind pocket [psorosis] virus in Tunisia, 2228.
— brown rot gummosis, citrus dry rot confused with, 2021.
— cachexia virus on citrus in U.S.A., 3432.
— — — on *Citrus macrophylla*, 3432.
—, *Cercospora citri-grisea* on, comparison of air-blast sprayer and helicopter in spraying against, 327.
—, — *gigantea* on, in U.S.A., 2945h.
— concave gum virus on citrus in Corsica, 3431; Tunisia, 2228; U.S.A., intercepted from abroad, 2159h; citrus stem-pitting virus associated with, 3431.
—, *Corticium salmonicolor* on, in Guatemala, 323.
—, *Deuterophoma tracheiphila* on, in Italy, cultural characters and virulence of, 2722; effect of compounds from peel on infection by, 2721; role of toxins in, 1847k.
—, *Diaporthe citri* on, in Southern Africa, 2725; U.S.A., 1579; comparison of air-blast sprayer and helicopter in spraying against, 327; control, 1579, 2725, 3438; *Guignardia citricarpa* confused with, 2725; protease activity in, 1449.
— dieback in India, 2229; citrus tristeza virus not causing, similarity of symptoms of to greening disease virus, 2229.
—, *Diplodia natalensis* on, 325; in U.S.A., 1579; control, 1579; effect of diphenyl + gamma radiation on growth of, 3440; factors affecting, 1580; pathogenicity of, to rootstocks of, 1580; var. react. to, 1580.
— diseases in Argentina, 610; Guatemala, 323; Surinam, 1578; aerial photography for detection of, 2599d.
— dry rot, confusion of, with brown rot gummosis, 2021.
— dwarf virus on citrus, purification of, 11h.
—, *Elsinoe fawcettii* on, in Guatemala, 323; N. Vietnam, 919.
—, *Erysiphe* on, in Guatemala, 323.
— exocortis virus on citrus in Cyprus, Israel and the Ivory Coast, 2227; Tunisia, 2228; U.S.A., 321, intercepted from abroad and from Sicily and Spain, 2159b; control, 2227, 2228; detection of, by infra-red photography, 319; indicators for, 321; transmission of, 2227; by contaminated knives, 2430; to citron, 322.
— foveate pitting in U.S.A., 2945g.
— fruit rots, control, 617, 1006.
—, *Fusarium* on, interaction of *Tylenchulus semipenetrans* and, 2431.
—, — *solani* on, 1452; in India, 2723; Israel, 1001; quantitative relations between *Trichoderma viride* and, 1001; *Tylenchulus semipenetrans* associated with, 1000.
—, *Geotrichum candidum* on, ultrastructure of, 877.

[Citrus, *Geotrichum candidum*] var. *citri-aurantii* on, effect of diphenyl + gamma radiation on, 3440.
—, *Gloeosporium* (?)*foliicolum* on, in U.S.A., 2945h.
—, *Glomerella cingulata* on, in Argentina, 491; Guatemala, 323; Yugoslavia, 2724; effect of diphenyl + gamma radiation on, 3440; factors affecting, 2724; non-occurrence of, on *Poncirus trifoliata*, 2724; protease activity in, 1449.
— greening disease in S. Africa, citrus leaf mottling disease in the Philippines, resembling, 2230.
(?)— — virus on orange, 2357a.
—, *Guignardia citricarpa* on, in Mozambique, 2725; characteristics of 2 groups of isolates of, 3436; confusion of, with *Diaporthe citri*, 2725; control, 2725, 3437; germination and infection of, 3437; variability and sporulation of isolates of, 324.
— 'impietratura' virus in Cyprus, 2944a; *on orange, 613.
— infectious variegation virus on orange, 611.
— karna dieback in India, similarity of symptoms of, to greening disease virus, 2229.
— leaf mottling virus disease in the Philippines, similarity of, to other citrus virus diseases, 2230.
— likubin disease in Formosa, citrus leaf mottling disease in the Philippines resembling, 2230; not identical with citrus tristeza virus, transmission of, by vectors, virus causing, 2231.
—, list of world wide virus-indexed propagating material, 1493.
*—, *Marasmiellus scandens* on, in Sarawak, 2358d.
—, *Oidium* on, in Italy, 615.
—, *Penicillium digitatum* on, in S. Africa, 3441; U.S.A., 1579; control, 1003, 1579, 3102; effect of diphenyl + gamma radiation on growth of, 3440; gamma radiation on storage of, 1004; fruit flies and moths associated with, 3441; reinfestation of, in packing house, 1005.
—, — *italicum* on, control, 3102; effect of gamma radiation on storage of, 1004; reinfestation by, in packing house, 1005.
—, *Phyllosticta citricola* on, in Guatemala, 323.
—, *Phytophthora citrophthora* on, in Israel, 1002; effect of diphenyl + gamma radiation on, 3440; effect of temp. of fruit on hot water treatment against, 1002; factors affecting, pathogenicity of, to rootstocks of, and var. react. to, 1580.
—, — *nicotianae* var. *parasitica* on, 134; in Guatemala, 323; control, 3433, 3434.
—, — *syringae* on, 326; in *Morocco, 3101.
—, *Pseudomonas* on, comparison of, with *P.* on pear, 1422.
—, — *syringae* on, in Guatemala, 323.
— psorosis virus on citrus in Cyprus, 2944b; Tunisia, 2228; U.S.A., intercepted from abroad, 2159b; detection of, by infra-red photography, 319; failure of, to protect against citrus variegation virus, 2019; transmission of, by seed, 320.
— — — on clementine and orange, 2944b.
— safargali disease in U.A.R., (?)chytrid causing, resemblance of, to citrus stubborn virus, 2020.
[Citrus] seedling yellows virus on citrus in U.S.A., intercepted from abroad, 2159b.
*— shell bark disease on lemon, 614.
—, *Sphaeropsis tumefaciens* on, in Jamaica, causing gall and 'witches' broom', 3435.
— stem pitting in Italy, 920b.
— — — virus on clementine and orange, 3431.
— stubborn disease virus on citrus in Algeria, Greece, and Italy, 2227; Surinam, 1578; Tunisia, 2227, 2228; resemblance of citrus safargali disease to, 2020; transmission of, 2227.
—, *Trichoderma viride* on, in Israel, 1001; effect of diphenyl + gamma radiation on, 3440; quantitative relations between *Fusarium solani* and, 1001.
— tristeza virus on citrus in Cyprus, 2227; Spain, 3100; U.S.A. intercepted from abroad, 2159b; citrus stem-pitting virus distinct from, 3431; control, 2227; detection of, by infra-red photography, 319; non-occurrence of, in Tunisia, 2228; transmission of, 2227; by vectors, 3100; variation in severity of symptoms of, 3100.
— — —, mild and severe strs. of, on *Citrus hassaku*, 3430.
— variegation virus on citrus, failure of citrus psorosis virus to protect against, 2019; purification of, 2018.
— — — on cowpea, 2018.
— vein enation virus on citrus in U.S.A., intercepted from abroad, 2159b.
— vein-phloem degeneration disease in Java, citrus leaf mottling disease in the Philippines resembling, 2230.
—, *Verticillium* on, in U.S.S.R., 3695b.
— virus diseases in the Mediterranean basin, 2227; Tunisia, 2228; abstracts of publications on, 2226; control, 2228; non-transmission of, by budding to *Prunus*, 1237; review of control, geographical distribution and transmission of, 2227.
— 'wart disease' in U.S.A., 2945g.
—, *Xanthomonas citri* on, in India, 2022; N. Vietnam, 919.
— xyloporosis virus on citrus in Cyprus, 2227; Italy, 612; Tunisia, 2227, 2228; U.S.A., intercepted from abroad, 2159b; control, 2227, 2228; detection of, by infra-red photography, 319; hosts of, 612; transmission of, 2227.
— yellow shoot disease in China, citrus leaf mottling disease in the Philippines resembling, 2230.
— *aurantifolia*, see Lime.
— *aurantium*, see Orange.
— *hassaku*, citrus tristeza virus, mild and severe strs. of, in Japan, 3430.
— *limonia*, see Lemon.
— *macrophylla*, citrus cachexia virus on, in U.S.A., 3432.
— *nobilis*, see Orange.
— *paradisi*, see Grapefruit.
— *poonensis*, see Orange.
— *reticulata*, see Clementine.
— *sinensis* and *C. tankan*, see Orange.
— *trifoliata*, see *Poncirus trifoliata*.
Cladosporium cladosporioides on clover and lucerne seed, 2765.
— *cucumerinum* on cantaloupe, 2919.
— — on cucumber, see Cucumber.
— *fulvum*, effect of drying on viability of germinated spores, 3339.

[*Cladosporium fulvum*] on tomato, *434, 3206.
— *herbarum*, effect of low temp. on growth and sporulation of, 247; of volatile metabolites from on gametophytes of *Pteridium aquilinum*, 3347.
— — on potato, 2498.
— *hordei*, effect of, on growth on tomato, 2106.
— *resinae*, biology and morphology of, 2639.
— — in aircraft fuel, 3337c.
— *transchelii*, effect of, on growth of tomato, 2106.
Clasterosporium carpophilum, see *Stigmina carpophila*.
— *iridis* on *Iris*, 1276.
Clavariaceae of the U.S.S.R., key to, 3694.
Claviceps microcephala on *Carex subpediformis* and grasses, 1214b.
— — on *Pennisetum typhoideum*, 2709.
— — strs., factors affecting alkaloid production by, 1214a.
— *miscanthi* on *Carex subpediformis* and grasses, 1214b.
— *paspali* on *Carex subpediformis*, 1214b.
— — on grasses, 1022, 1214b.
— *purpurea*, effect of herbicides on growth of, 1897.
*— — on barley, 3074.
— — on *Carex subpediformis*, 1214b.
— — on cereals, 3075.
— — on grasses, 1022, 1214b, 3075.
*— — on *Paspalum quadrifarium*, 1633.
— — on *Phalaris arundinacea*, 3680.
— — on rye, see Rye.
— — on sugarcane, 1716.
— — on wheat, 1513g.
— —, sporulating phase in growth of, 2987.
— *syntherismae* on *Carex subpediformis* and grasses, 1214b.
Clay preparations, effect of, on release of methylisothiocyanate from treated soil, 2968.
Clematis, *Ascochyta* on, causing wilt, resemblance of, to *A. clematidina*, 1274.
Clementine (*Citrus reticulata*), citrus psorosis virus on, in Cyprus, 2944b.
—, — stem-pitting virus on, in Corsica, associated with citrus concave gum virus, 3431.
—, — xyloporosis virus on, in Italy, tolerance of, 612.
—, *Phytophthora syringae* on, in Morocco, 326.
Clerodendron, *Cercospora apii* f.sp. *clerodendri* on, 3112.
Clitocybe multiceps on *Liquidambar styraciflua* forming mycorrhiza, 1891.
Clorox against *Fusarium solani* on elm root cuttings, 3578.
Clover (*Trifolium*), *Acrostalagmus* and *Alternaria tenuis* on seed of, 2765.
—, *Arabis* mosaic virus on, in Great Britain, 360, 1634.
—, *Ascochyta pisi* on, in U.S.S.R., 2879.
—, — *trifolii* on, in U.S.S.R., 2940b.
—, ascomycete in rhizosphere of, 1288.
—, *Aspergillus* in rhizosphere of, 1288.
—, — on seed of, 2765.
—, bean yellow mosaic virus on, in England and Wales, 1634; U.S.S.R., 1142; Yugoslavia, 667; effect of fluorescent light on, 2946b; effect of, on, 667; particle size of, 2655; properties of, 667.
— big vein virus, electron microscopy of, in vector, 3377.
— — — —, see also Clover wound tumour virus.
[Clover], *Cephalosporium gregatum* on, similarity of, to soybean isolates, 3634j.
—, *Cladosporium cladosporioides* on seed of, 2765.
—, *Curvularia* in rhizosphere of, 1288.
—, *Cylindrocarpon ehrenbergii* on, in Finland, entry, prevalence, and symptoms of, 2763.
—, *Cymadothea trifolii* on, in Great Britain, hosts of, 2053.
—, effect of *Cephalosporium* in soil on, 1287.
—, *Erysiphe polygoni* on, in Germany, 6; appressorium formation by, 3638; effect of on yield, 6; electrophoretic studies on, 2764; factors affecting, 6; genetics of resistance to, 2054.
—, fungi in rhizosphere of, effect of, on germination of, 1843f.
—, *Fusarium* in rhizosphere of, 1288.
—, — in rhizosphere and root of, effect of root exudate on, 1636.
—, — on, 2765, 3473.
— — *oxysporum* in rhizosphere and root of, effect of root exudate on, 361.
—, — *roseum* in rhizosphere of, effect of root exudate on, 361.
—, — — on, in Irish Republic, symptoms of, 508c.
—, — *solani* on, effect of root exudate on, 361.
—, *Gibberella zeae* on, in Finland, entry of, 2763.
—, *Gonatobotrys* on seed of, 2765.
—, groundnut rosette virus can infect, 805.
—, inhibition of *Ophiobolus graminis* by root extracts of, 254.
—, *Kabatiella caulivora* on, in Finland, 917; U.S.S.R., 2940b; control, 668.
—, *Leptosphaerulina australis*, *L. briosiana*, and *L. trifolii* on, factors affecting growth and sporulation of, 2257.
—, lucerne mosaic virus on, in Czechoslovakia, 2766; U.S.S.R., 1142.
—, *Macrophomina* in rhizosphere of, 1288.
—, *Mycosphaerella pinodes* on, in U.S.S.R., 2879.
—, *Oedocephalum* on seed of, 2765.
—, papaw yellow crinkle virus can infect, 2483.
—, pea mosaic virus on, in England and Wales, 1634; U.S.S.R., 1142.
—, *Penicillium* on seed of, 2765.
—, *Peronospora trifoliorum* on, in Finland, 1508.
—, *Pestalotia truncata* on, in Finland, entry of, 2763.
—, *Phoma* in rhizosphere of, 1288.
— phyllody virus on clover in Irish Republic, 508c; Rumania, 3375, 3471; factors affecting, 3375; hosts of, 2659, 3375; interaction of *Rhizobium* with, 1635, 2256; overwintering of, 1492h; recovery from, 2369r; studies on, 3470; symptomless host of, 1492h; transmission of, by dodder and grafting, 3471; by vectors, 1492h, 2659, 2660, 3375, 3376, 3471
— — — on *Convolvulus arvensis*, 3375.
— — — on potato, 2660.
— — — on strawberry, 3471.
— — — on *Vinca rosea*, 1492j.
—, *Physoderma trifolii* on, in U.S.A., *Calif. 669.
—, *Pleospora herbarum* on, 2765; in Germany, 1027.
—, potato witches' broom virus on, transmission of, by vectors, 2660.
—, — yellow dwarf virus on, fine structure and intracellular localization of, 411.

[Clover], *Pseudomonas fabae* on, in U.S.S.R., resistance to, 486.
—, — *syringae* on, in Great Britain, *Cymadothea trifolii* associated with, 362.
—, *Pythium debaryanum* on, in Finland, entry of, 2763.
—, red, mottle virus on clover in Czechoslovakia, 141; England and Wales, 1634; hosts and transmission of, 141.
—, —, vein mosaic virus on clover in Great Britain, 360, 1634; serology of, 2592g.
—, *Rhizobium trifolii* on, effect of clover phyllody virus on nodulation caused by, 2256.
— root rot, effect of phytotoxins from crop residues on, 2626.
—, *Sclerotinia trifoliorum* on, in Finland, 3763; U.S.S.R., 2940b; entry of, 2763; factors affecting, 2763; inoculation of, 1637; prevalence of, 2763; revised leaflet on, 3472; rotting caused by, 1638; symptoms of, 2763; var. react. to, 2454.
—, *Sclerotium* in rhizosphere of, 1288.
—, *Stemphylium sarciniforme* on, in U.S.S.R., 3034.
—, strawberry latent ringspot virus on, in Great Britain, 360.
— stunt virus on bean, 790.
—, symbiotic association of roots of, with soil fungi, 38.
—, tomato black ring virus on, in Great Britain, 360.
—, *Uromyces trifolii* on, in U.S.A., 2946b.
*—, *Verticillium lateritium* on, in Canada, 1180e.
— virus diseases in Great Britain, 360; relationship of, to bean yellow mosaic and tomato ringspot viruses, 2159e; symptoms of, 2255; technique for detecting, 2159e; transmission of, by seed, 2159e; by vectors, 2255.
—, white, mosaic virus on clover, in Czechoslovakia, 2761; Great Britain, 360; hosts, properties, and symptoms of, 2761; serological relationship with potato virus X, 2592d.
— wound tumour virus on clover, electron microscopy of, 3708.
— yellow mosaic virus on bean, 2883.
— — — — on clover, light and electron microscopic examination of, 12z; effect of, on, 2762.
— — — — on Leguminosae, 2883.
— — vein virus on clover in Great Britain, 360; serological relationships of, 2592h.
C.M.I. descriptions of pathogenic fungi and bacteria, set 11, 1471; set 12, 3008; set 13, 2960.
Cobalt, effect of, on antagonists to *Verticillium dahliae* on cotton, 633; on *Puccinia graminis* on wheat, 3049.
Cobroleo, use of, on *Hevea* rubber, 1089e.
Cochliobolus carbonum on maize, 1999, 2370a,b.
— *heterostrophus*, inhibition of maize, rice and wheat by metabolite of, 3083.
— — on maize, 113, 236i, 2370a,b.
— *miyabeanus*, effect of griseofulvin and sulphanilamide on, 1436; of compression on conidia of, 1899.
— — in soil, 3683.
— — on rice, see Rice.
— *sativus*, hosts of, 595.
— — in soil, 258, 1218, 2186, 3001.
— — on barley, 595.
[*Cochliobolus sativus*] on beet seed, 786.
— — on wheat, see Wheat.
— *stenospilus* on *Cynodon dactylon*, 2945a.
— — on sugarcane, 1095.
— *victoriae* on grasses, 1554.
— — on oats, see Oats.
— —, production of disease in, with phenol extracts of diseased and normal mycelia, 878.
— — + *Meloidogyne incognita acrita* on oats, 3078.
Cochliotis melolonthoides, *Cordyceps barnsii* on, in E. Africa, 1191.
Cocksfoot, see *Dactylis*.
Cocoa, see Cacao.
Coconut (*Cocos nucifera*) 'bitten leaf' in Panama, relationship between *Digitaria* and, 2296.
*—, *Botryodiplodia theobromae* on, in India, 2088.
— 'brown leaf' in Panama, (?)nutritional deficiency causing, symptoms of, 2296.
— cadang-cadang disease in Philippines, breeding against, 3164; no correlation between nutrient deficiency or toxicity and, 2087; symptoms of, 3534; transmission of, to Leguminosae and *Phaseolus*, 236b.
—, *Ceratocystis paradoxa* on, in Colombia, association of, with coconut nematode red ring, 3389.
— 'frond drop' in Philippines, resemblance of, to disease in Jamaica, (?)*Thielaviopsis* sp. causing, 3163.
—, *Gliocladium roseum*, *Gloeosporium*, and *Helminthosporium halodes* on, aerial spraying against, 709.
— leaf rot, (?)B deficiency causing, 710.
— leaf and root (wilt) disease in India, 3165.
— lethal yellowing in Jamaica, effect of, on yield, 3315; search for cause of, 3635c; susceptibility to, 711; transmission of, mechanically, 3634k.
—, Mg deficiency in, in Colombia, 3389.
— nematode red ring in Colombia, *Ceratocystis paradoxa* associated with, 3389.
—, N deficiency in and *Pestalotia palmarum*, *Phoma*, and *Phytophthora* (?)*arecae* on, in Colombia, 3389.
—, *Phytophthora palmivora* on, in Colombia, 3389; Sarawak, 2358b; association of, with coconut nematode red ring, 3389.
— 'porroca' in Colombia, (?) due to B deficiency, 3389.
—, potassium deficiency in, in Colombia, 3389.
— progressive wilt in Colombia, mineral deficiencies causing, 3389.
— root (wilt) disease, (?)*Stachytarpheta indica* inoculum reservoir for virus, 712.
— tatipaka disease in India, spread and symptoms of, 2795.
— trunk blue stain in Colombia, *Aspergillus*, *Penicillium*, and scale insects associated with, 3389.
— virus diseases, incidence, symptoms, and transmission of, 2e.
— milk in combination, use of to stabilize Bordeaux mixture, 1433.
Cocos nucifera, see Coconut.
Coelomycetes in *Eucalyptus regnans* leaf litter, 161.
Coffea, see Coffee.
Coffee (*Coffea*), *Armillaria mellea* on, in Ethiopia, 329.

[Coffee], *Ascochyta tarda* on, in Kenya, *Eucosma uereidopa* associated with, 1264.
—, *Cercospora coffeicola* on, in Ethiopia, 329; Vietnam, 919; control, 328, 2023b, 3442; ethylene from infected leaves of, 2023a; hosts of, 2023c; longevity and viability of, 2023d; survival of, 2023c; (?)variants of, 328.
—, *Corticium salmonicolor* on, in Vietnam, 919.
—, — *solani* on, control, 328.
— dieback in Ethiopia, 329.
—, *Fusarium stilboides* on, effect of heating on, 1266.
—, *Glomerella cingulata* on, in Cameroon, 3443; E. Africa, 1265; Ethiopia, 329; Kenya, 2726a; Tanzania, 618; ascospore infection by, 2727; berry wetness in relation to, 3106; biology of, 2726a; *Colletotrichum coffeanum* preferred name for, 1265; control, 619, 620, 1267b, 2024, 2726e, 3443, 3445; direct effects of Cu on, 3444; dissemination of, 2726a; effect of Cu sprays on, 2024; of fungicides on, 2941f; of heating on, 1266; eradication of, 2726d; *Fusarium* associated with, 618; inoculum potential in, 2941f; resistance to, 3105; survey of, 2726d; symptoms of, 2726c; timing of spray applications against, 620; var. react. to, 330.
—, *Helicobasidium compactum* on, in Guatemala, aetiology and symptoms of, 2234.
—, *Hemileia vastatrix* on, in Ceylon, 3558; Ethiopia, 329; Natal, 2025; Papua and New Guinea, 1403c; Vietnam, 919; air-borne spores of, 328, assessment of fungicides against, 3103; bifid infection peg of, 3446; control, 328, 1267a, 2728, 3103, 3104, 3445; effect of altitude on distribution of, 329; of cultural conditions on yield of, 3104; of darkness and light on, 1267a; of N on, 3104; eradication of, 1403c; genetics of, 2432; phytotoxicity of cycloheximide against, 3103; (?)*Verticillium* parasitizing, 329; var. react. to, 2025.
*—, *Marasmiellus scandens* on, in Sarawak, 2358d.
— mosaic in Vietnam, 2200.
—, *Mycena citricolor* on, effect of light on gemmae formation in, 2729; physiology of, 1583.
— Research Foundation, Kenya, account of work of, 2726b.
—, *Rosellinia bunodes* and *R. pepo* on, inoculation and pathogenicity of, 1582.
— virus diseases, incidence, symptoms and transmission of, 2e.
Cola chlamydantha, cacao swollen shoot virus on, (?)85b; in Ghana, 1952.
— *gigantea*, cacao mottle leaf virus on, immunity from, 85b.
*— *nitida*, *Phyllosticta coliicola* on, in Senegal, 265.
Coleoptera, *Beauveria bassiana* and *Melanospora parasitica* on, in U.S.S.R., 2170.
Coleosporium asterum on pine, 158c, 459.
*— *bletiae* on *Phaius mishmiensis*, 3635a.
— *campanulae* on *Campanula*, 1115.
— — on pine, 1337.
— *euphrasiae* on *Euphrasia* and *Idontites rubra*, 1115.
— *petasitis* on *Petasites albus*, 1115.
— *tussilaginis* on *Tussilago farfara*, 1115.
— *viburni* on pine, 459.
**Coleroa chaetomium* on raspberry, 1663.
Colletotrichum acutatum, hosts of, 370.
— *capsici*, effect of *Streptomyces griseus* on, 1853.
*— — on *Bougainvillea glabra*, 267.
— — on *Capsicum*, 1830.
— —, utilization of oligosaccharides by, 251
— — f.sp. *cyamopsicola* on *Cyamopsis psoraloides*, 1154, 1895, 3605.
— *coccodes*, comparison of pathogenicity of *C. dematium* with, 186.
— — on *Capsicum*, 3207.
— — on potato, 2093, 3180.
— — on tomato, 231k, 3207.
— *coffeanum* on coffee, see *Glomerella cingulata*
— *dematium* associated with *Vinca rosea* dieback, 1283.
— —, *C. spinaciae* synonym of, and comparison of pathogenicity of, with *C. coccodes*, 186.
— —, effect of vitamins on growth and sporulation of, 3671.
— —, hosts of, 186.
*— — on jasmine, 2248.
— — on lily, 351.
*— — on tomato, 434.
— *gloeosporioides* f.sp. *alatae* on yam, 3617.
— — var. *gomphrenae* on *Gomphrena globosa*, 136.
— — var. *minor* on fruit, 370.
— *graminicola* on barley, 2161c.
*— *ixorae* on *Ixora parviflora*, 2248.
— *lagenarium*, detection of esterases of, 3344.
— —, inhibition of, by digitonin and nystatin, 2180.
— — on cucumber, see Cucumber.
— — on melon, 1166, 1820, 3298.
— — on watermelon, 2576.
— *liliacearum*, (?)*C. lilii* on lily synonymous with, 657.
— *lilii* on lily, 352, 657, 3114.
— *lindemuthianum*, effect of volatile metabolites from, on gametophytes of *Pteridium aquilinum*, 3347.
— — on bean, see Bean.
— —, production of polysaccharide degrading enzymes by, 2988.
— —, sensitivity of, to actidione, 533.
— *musae*, effect of, on *Fusarium oxysporum* f.sp. *lycopersici* on tomato, 2830.
— — on banana, see Banana.
— — and *C. papayae*, utilization of polysaccharides by, 1211.
— *phomoides* on *Capsicum*, 1831.
— — on tomato, 1449.
— *pisi* on pea, 1513i.
— *spinaciae*, synonym of *C. dematium*, 186.
— *tabacum* on tobacco, 2825, 3388.
— *trifolii* on lucerne, 363.
— —, polygalacturonate trans-eliminase produced by, 875.
*— *truncatum* on lucerne, 3120.
Colloidox against *Hemileia vastatrix*, 1267a, *Scirrhia pini*, 458.
—, see also Copper oxychloride.
Collybia velutipes on *Liquidambar styraciflua* forming mycorrhiza, 1891.
Colocasia, *Sclerotium rolfsii* on, basidial formation by, 67, 272, 885a, 2388.
*— *esculenta*, *Phytophthora nicotianae* var. *parasitica* on, 218.
Colorado beetles, effect of boverin on, 2367.
Colpoda, antagonism of, to *Corticium solani* on cotton, 623.

Commelina coelestis, cherry leaf roll virus on, 77.
— *diffusa*, cucumber mosaic virus on, in the Antilles, 2f.
Compositae, *Itersonilia perplexans* on, overwintering of, 135.
—, *Plasmopara* on, host-parasite relationships of, 708.
—, *Robinia* mosaic virus can infect, 1346.
Compound C940 against *Erysiphe polygoni* on bean and *Podosphaera leucotricha* on apple, 862.
Conferences, Congresses, Symposia, etc. [see also Reports], Acad. Sci., India, (34th), 1852; (35th), 1853; Agricultural Machinery, 2933; All-Union (U.S.S.R.), immunity of crops, 1848a,b; pl. prot., 842; virus diseases of crops, 1928; American Bot. Soc., 2948; American Hortic. Soc., 2599; American Phytopath. Soc., 12, 1854, 2159, 2600, 2947, 3316, 3634; American Potato Ass. (50th), 402; Biochemical problems of diseased plants, E. Germany, 3; British Insecticide & Fungicide (2nd), 230; (3rd), 231; Canadian Phytopath. Soc., 2161; cereal rusts, 88; Colston Res. Soc. Bristol (18th), 1407; crops, N.I.A.B., 2686; diseases of maize and millets Chandigarh, India, 3632; European, Cereal Rusts, 88; Fruit and Market Garden Crops, Avignon (12th), 234; on fungus and lichen flora of the Baltic (3rd), 1849; herbicides, Verona, 2601; host-parasite relations in plant pathology, Budapest, 511; Industrial Microbiology, 3337; Inter-African Phytosanitary Commission, 2977; International Botanical (10th), Edinburgh, 1470; International Chemotherapy (4th), 31; International Copper Development Co., Vienna, 1193; International for Microbiology (9th), Moscow, 2595, 2651; International Rubber Res. and Development Board, Ceylon, 3183; International Seed Testing, Munich, 1; International Tobacco (4th), 152; International on Vine and Wine (11th), 2585; International on virus and vector on perennial hosts with special reference to *Vitis*, 2352; Interscience on Antimicrobial Agents and Chemotherapy (5th), 31; mango blight, 2080; microbiological deterioration in the tropics, 867; Mushroom, scientific (1st) and international (6th), Netherlands, 2928; Nat. Peanut Res. Georgia, U.S.A., 1386; nutritional interactions between plants and micro-organisms, France, 1843; Pacific Science (11th), Tokyo, 234, 1948; Phytopharmacy and Phytiatry, 2369; Plant Diseases and Pests in a developing Europe, 2355; Plant Pathology (1st), Israel, 1516; Plant Protection Committee, F.A.O., 2978; Plant Protection Inst. Poznan, 1176; plant viruses, Wageningen, 908; potato virus diseases in U.S.S.R., 2488; productivity in cereals, Ass. Appl. Biologists, 2421; protection of cultivated tropical plants, Marseilles, 2; Sci. Dept. U.P.A.S. India, 3191; Soc. Developmental Biol., 1842.
Coniella diplodiella on *Geranium*, 1612.
Coniferae, *Aspergillus* on, 455.
—, *Botrytis cinerea* on, in England, 440.
—, *Ceratocystis* on, in Canada, transmission of, by vectors, 2191.
—, *Cylindrocarpon* on, 765.
—, *Cylindrocladium* on, 455.
[Coniferae], damping-off of, in S. Australia, 3226; interaction of seedborne and soil-borne micro-organisms in relation to, 455.
—, *Didymascella thujina* on, in Germany, distribution and specialization of, 2117.
—, *Fomes annosus* on, in U.S.S.R., 452.
—, fungi on, in Germany, 2117; S. Australia, causing damping-off, 3226.
—, *Fusarium* on, 455.
—, *Hypoderma desmazierii*, *Lophodermium canberrianum*, *L. juniperinum*, and *L. pinastri* on, in Australian Cap. Territ., 1351.
—, microflora on seeds of, in Formosa, 2536.
—, *Naemacyclus niveus* on, in Australian Cap. Territ., similarity of symptoms of, to *Lophodermium pinastri*, 1351.
—, *Penicillium* and *Rhizoctonia* on, 455.
—, *Rosellinia aquila* on, in Germany, mode of infection by and symptoms of, 2117.
—, *Verticillium* on, 455.
Coniophora olivacea on timber, 2125.
— *puteana*, effect of pH on development of, 1767.
— —, enzymes in culture filtrates of, 173b,e.
— —, intracellular polyphenoloxidases of, 1446.
— — on *Cupressus lusitanica*, 1745a.
— — on pine stumps, 2863.
— — on spruce, 2847c, 2863.
— — on timber, see Timber.
Coniothyrium concentricum on *Yucca aloifolia*, 2048.
— *henriquesii*, synonymous with *C. concentricum*, 2048.
— *opuntiae* on cactus, 2037.
— *pyricolum*, culture of, 1425.
Convolvulus arvensis, as reservoir for tomato stolbur virus, 2523.
— —, clover phyllody virus on, in Rumania, differentiation of from stolbur symptoms, 3375.
— *korolkovii*, antagonism of extracts from to *Verticillium dahliae*, 3336.
Copper against *Alternaria longipes* on tobacco, 1327; *Cephaleuros parasiticus* on tea, 1722; *Cercospora beticola*, 3265; *Colletotrichum capsici* f.sp. *cyamopsicola* on *Cyamopsis psoraloides*, 1154; *Corticium solani* on *Hevea* rubber, 2306; die-back of *Albizia moluccana*, 1718d; *Elsinoe* on pepper, black, 1680; *Exobasidium vexans*, 3191; *Glomerella cingulata* on coffee, 2726e; on ivy, 2247; on mango, 394; *Hemileia vastatrix*, 2728; *Phomopsis theae* on tea, 1719; *Phytophthora* on cacao, 1519c; on *Capsicum*, 2358a; *P. infestans* on potato, 2800; *P. palmivora*, 1522; *Pseudoperonospora humuli*, 3524; *Pseudopeziza ribis*, 1665; *Scirrhia pini*, 2540; *Uncinula necator*, 228; *Venturia inaequalis*, 1032b; *Xanthomonas oryzae*, 994.
— as plant protectant in Europe, review of, 1193a.
—, contaminating *Hevea* rubber, 1089c.
— deficiency in avocado pear, 3149; vine, 2931d.
—, effect of, on *Corticium solani*, 3670; *Glomerella cingulata*, 2024, 3444; *Fusarium martii* var. *pisi* on pea, 1379; *Macrophomina phaseoli*, 3670; microbial antagonists to *Verticillium dahliae* on cotton, 633; *Phytophthora infestans*, 1075; soil fungi, 1090c; *Streptomyces scabies* on potato, 2503.

[Copper] injury to citrus, 2725; coffee, 2728; holly, 653; vine, 228, 2931d.
— versus captan, 1032b, difolatan, 2726e; dithiocarbamates, 1032b; malachite green, 1519c; sulphur, 1032b.
— in combination against *Alternaria longipes* on tobacco, 1327; *A. pluriseptata* on cucumber, 1167; *Corticium solani* on *Hevea* rubber, 2306; *Lophodermium macrosporum* on spruce, 1131; *Pseudoperonospora humuli*, 3524.
— — —, effect of, on bolting of beet, 2872.
— -A-compound against *Alternaria chrysanthemi* on *Chrysanthemum maximum*, 343.
— acid sulphate as seed treatment for beet, 2556.
— carbonate, effect of, on viability of wheat seed, 3066.
— -chromium-arsenic oxide as timber preservative, 1765.
— compounds against *Scirrhia pini*, 3229; *Venturia inaequalis*, 373.
— — in combination, effect of, on grape juice fermentation, 1505.
— —, organic, against *Uncinula necator*, 228.
— —, —, injury to vine, 228.
— oxide against *Glomerella cingulata* on coffee, 3443; *Guignardia citricarpa*, 2725.
— — in combination against *Cercospora beticola*, 2964; *Phytophthora infestans* on potato, 2964.
— — — — constituent of perezin, 1720.
— oxychloride against *Cercospora beticola* 788; *C. microsora* on *Tilia*, 763; *Coryneum foliicola* on apple, 1291; diseases of stored fruit, 3484; *Erysiphe cichoracearum* on cucumber, 1817; *Exobasidium vexans*, 1720; *Glomerella cingulata* on coffee, 3443; *Guignardia citricarpa*, 2725; *Phytophthora infestans* on potato, 2800; *Plasmopara viticola*, 2589; *Pseudomonas lachrymans* on cucumber, 1817; *Tilletia caries*, 89.
— —, effect of PVC on redistribution of, on apple, 3128.
— — injury to apple, 1032e.
— — in combination against *Plasmopara viticola*, 835; *Taphrina deformans* on peach, 2777; *Venturia inaequalis*, 1032e.
— — + zineb, synergistic action of, 2963.
— oxyquinoleate against *Gibberella zeae* on maize and wheat, 90; *Griphosphaeria nivalis* and *Leptosphaeria nodorum* on wheat, 89; as seed treatment for beet, 787; for flax, 638.
— -8-quinolinolate against *Alternaria kikuchiana* on pear, 11e.
— salts against plant diseases in Africa and Asia, 1193c.
— sandoz against *Corticium theae* on tea, 1722; *Phytophthora palmivora*, 1521.
— sulphate, adaptation of *Venturia inaequalis* to, 2461.
— — as seed treatment for cotton, 2237; for wheat, 2416, 3058; as soil disinfectant, 676; as timber preservative, 2865b.
— —, effect of, on resistance of cucumber to *Erysiphe cichoracearum*, 2145.
— — for disinfecting potato storehouses, 3552.
— —, in combination, against *Erysiphe polygoni* on bean, 794; *Plasmopara viticola*, *Sclerotinia fuckeliana*, and *Uncinula necator* on vine, 2155.
—, tribasic, against *Cerospora beticola*, 3266.
— trichlorophenol as seed treatment for cotton, 313.
[Copper] trichlorophenolate as seed treatm for cucurbits, 2923.
— — in combination as seed treatment cotton, 621.
Coprantol against *Plasmopara viticola*, 835.
Coprinus lagopus, genetics of, 2593a.
Coprosma robusta, mycorrhiza of, import of, in P uptake, 2380.
Corchorus capsularis and *C. olitorius*, see J
Cordyceps barnsii on *Cochliotis melolonth* in E. Africa, 1191.
Cordyline terminalis, *Cercospora* on, in Hawaiian Islands, and Samoa, 2159d.
Coriander (*Coriandrum sativum*), *Alter poonensis* on, comparison of, with *A. u lifericola* on various hosts, 1305.
— disease, unidentified virus associated w 2594e.
*—, *Erwinia aroideae* on, in India, 852.
—, — *carotovora* on, in Rumania, 2486; ae logy of, 1677.
—, *Gloeosporium achaeniicola* on, in Rum 2486.
—, parsnip mosaic virus on, 3311h.
—, *Xanthomonas carotae* and *X. translucens* aetiology of, 1677.
Coriaria, *Streptomyces* associated with nodules of, in New Zealand, 246.
Coronilla varia, virus in, hosts of, serologic related to cucumber mosaic virus, 3316a.
Corticium fuciforme on *Festuca*, 2052.
— — on *F. rubra*, 1630.
— — on turf, 1631.
— *galactinum*, hosts of, 2834.
— *radiosum* on spruce, 2847c.
— *salmonicolor* on citrus, 323.
— — on coffee, 919.
— — on *Hevea* rubber, 1088, 1089c, 3183a.
*— — on nutmeg, 2358d.
*— *sasakii* on maize, 3632b.
— — on rice, 29a, 235k, 531.
— *solani*, antagonism of *Pythium* to, 60; of bacteria and fungi to, 3004; of *Trichode viride* to, 3637.
— —, asexual nuclear behaviour of, 1924.
— —, cellulolytic capacity of, 59.
— —, comparative study of strs. of, 2396.
— —, distinct perfect states of, 2194.
— —, effect of antibiotic on, 2971; of fu cides on, 838; of herbicides on, 846; sodium trichlorophenate on sclerotia of, of trace elements on, 3670.
— —, enzyme production by, 249, 875, 18
— —, formation of mycelial strands sclerotia in, 250.
— —, growth of *Pythium oligandrum* with cellulose film, 59.
— —, heterokaryosis in, 563.
— —, homothallism in, 2641.
— — in soil, see Soil.
— —, interactions of, with other soil fungi cellulose film, 59.
— — on *Agrostis palustris*, 1630.
— — on artichoke, 2596.
— — on banana roots, 2078.
— — on bean, see Bean.
— — on beet, 1785.
— — on cabbage, 782.
— — on coffee, 328.
— — on Coniferae, 3226.
— — on cotton, see Cotton.
— — on Cruciferae, 10a.
— — on cucumber, 842a.

orticium solani] on *Dactylorchis purpurella*, 244, 2381.
— on flax, 1480, 1597.
— on Gramineae, 1573.
— on groundnut, 204, 1158, (?)3287.
— on *Hevea* rubber, 1088, 2306.
— — on *Hibiscus cannabinus*, 512a, 639.
— on *Hydrangea*, 654.
— on lily, 351.
— on *Lotus corniculatus*, 670, 3124.
— on lupin, 1030.
— — on maize, 2358d.
— on mango, 860.
— on orange, 1578.
— on pea, 1513i.
— on *Phaseolus aureus*, 193a,b.
— on pine, see Pine.
— on potato, see Potato.
— on rice, 259, 1573.
— — on soybean, 2104.
— on spruce seeds and seedlings, 2108a.
— — on *Tephrosia vogelii*, 3530.
— — on tobacco, 2104.
— — on tomato, 435, 436a,b.
— — on wheat, 297, 928.
— — on *Zoysia japonica*, 1286.
— —, source of food for *Aphelenchus avenae*, 2524.
— — + *Alternaria solani* on tomato, 435.
- *theae* on tea, 1722.
orylus avellana, fungi on, in U.S.S.R., 1747.
orynebacterium, reclassification of, 519.
- *fascians*, C.M.I. description of, 2960.
— — on ornamentals, 1185.
— — on pea, 1147a,b,c,d.
— — on *Pelargonium*, 1281.
— — on tobacco, 1102.
— —, role of cytokinins in 'fasciation' disease caused by, 851.
- *flaccumfaciens* on bean, 2566.
— — on radish, 2177.
- *insidiosum* on lucerne, see Lucerne.
- *michiganense* on *Lycopersicon peruvianum*, 748.
— — on tomato, see Tomato.
- *rathayi* on barley, 91.
- *sepedonicum*, inhibition of, by streptocycline, 1197.
— — on potato, see Potato.
- *tritici*, inhibition of, by streptocycline, 1197.
Corynespora cassiicola, association of, with papaw decline, 1056.
— — on *Ricinus communis*, 1308.
— — on tomato, 745, 2525.
— —, toxicity of dithiocarbamates to, 1874.
Coryneum beijerinckii, see *Stigmina carpophila*.
- *foliicola* on apple, 1291.
Cotinus coggygria (?)bacterial leaf spot in Poland, 2083.
— —, *Fusarium* on, in U.S.S.R., 1337.
Cotton (*Gossypium*), *Aerobacter aerogenes* in bolls of, 636.
—, *Alternaria* on, in U.S.S.R., 2026, 2238.
—, — *macrospora* on, in Somalia, morphology and symptoms of, 2734.
—, — *tenuis* on, control, 860.
—, *Aspergillus* on, in U.S.S.R., 2026; effect of granosan on, 127.
—, — *flavus* in rhizosphere of, effect of, on growth, 624.
—, — — on, association of, with fluorescence of seed, 338.
[Cotton, *Aspergillus*] *terreus* in rhizosphere of, effect of, on growth, 624.
—, — — — — —, interaction of, with *Fusarium oxysporum* f.sp. *vasinfectum*, 336.
—, *Bacillus pumilus* in bolls of, 636.
—, — *subtilis* in rhizosphere of, effect of, on growth, 624.
—, bacteria in rhizosphere of, antagonism of, to phytopathogenic fungi, 3004.
— boll rot, entry of pathogens and incidence of, 2730a.
—, boron deficiency in, in Zambia, symptoms of, 1595.
*—, *Cercospora gossypina* on, in Somalia, 2027.
—, *Corticium solani* on, 622, 2730d; in U.A.R., 337; U.S.A., 1592; U.S.S.R., 2026; antagonism of *Colpoda* infusoria to, 623; control, 1268, 2026; effect of, on yield, 1592; factors affecting, 337; penetration by, 1592.
—, *Cunninghamella echinulata* in rhizosphere of, interaction of, with *Fusarium oxysporum* f.sp. *vasinfectum*, 336.
— diseases in Nigeria, 1404b.
—, effect of P on Ca and Na content of, 625.
—, *Erwinia aroideae* in bolls of, 636.
—, fungi in rhizosphere of, antagonism of, to pathogenic fungi, 3004.
—, *Fusarium* on, 2730d; in U.S.S.R., 2026; control, 1268, 2026; effect of granosan on, 127; of Mo on, 2737.
—, — *oxysporum* f.sp. *vasinfectum* on, in Colombia, 3389; Sudan, 334; U.S.S.R., 1513k; effect of amino acids on, 3447; of amoebae on, 632; of green manure on, 2667; of inoculum potential on, 128, 1007; of, on chemical composition of plant, 625, 2030, 2736; of sorbic acid on, 1271, 3448; factors affecting, 334, 626; host-parasite relationships in, 1585; hydrolysis of glycosides in axial organs of, 2738; hydrolytic enzymes of, 1270; morphological and physiological variations in, 335; pathogenesis in, 1269, 3109; penetration by, 2159c; significance of ecology in control of, 2735; tannin as C source for, 2159c; technique for inoculating, 627; variation in fusaric acid production with different C sources, 2029; in pathogenicity of, with different C sources, 2028; var. react. to, 334, 1269, 2434.
—, — — — — strs. on, pathogenicity and toxic metabolites of, 1269.
—, — *solani* on, factors affecting, 626; morphological and physiological variations in, 335; pathogenicity and toxic metabolites of, 1269.
—, *Gibberella fujikuroi* on, effect of, on chemical composition of plant, 625, 2030, 2736.
—, *Glomerella gossypii* on, in Colombia, 3389; Spain, 2032; transmission of, by seed, 2433.
— leaf roll (?)virus disease in Thailand, similarity of, to virus disease in Philippines, 2730c.
—, *Macrophomina phaseoli* on, 2295; development of pycnidia of, 66; physiologic races of, 3110.
— moulds, effect of irradiation on infection by, 2733.
—, *Penicillium* on, effect of granosan on, 127.
—, *Phomopsis* on, tentatively named *P. gossypii*, 2947b.
—, *Phymatotrichum omnivorum* on, effect of fungicides on, 1591; responses of root tissues to, 2619.

[Cotton], *Ramularia gossypii* on, technique for inoculating, 1010.
—, *Rhizoctonia* on, in U.S.S.R., 2026; pathogenicity of, 579.
—, *Rhizopus stolonifer* on, effect of CCC on growth of, 1593; formation of gossypol in infected tissues of, 3449.
—, *Sclerotium rolfsii* on, 2730d.
— seed rotting, control, 621.
— seedling disease, control of, 2732.
— small leaf disease in Pakistan, (?)2,4-D causing, differing from small leaf in India, 1596.
—, *Thielaviopsis* on, in U.S.S.R., 2026.
—, — *basicola* on, in U.S.S.R., 635, 1009, 1590, 2026; control, 635, 2026; effect of, on yield, and penetration by, 1009; survival of, 1590.
—, — — + *Verticillium alboatrum* on, effect of, on, 2740.
—, *Trichothecium roseum* on, effect of irradiation on infection by, 2733.
—, *Verticillium* on, in U.S.S.R., 3695b; control, 2031, 2737; effect of microelements on, 3453; of trichodermin-3 on, 2737; factors affecting, 3454; resistance to, 1588, 2209; rigolen ploughing for control of, 3451; sp. react. to, 1588.
—, — *alboatrum* on, 333, 2009; in U.S.A., 332, 3108; comparison of virulence of isolates of, 1008; development of and penetration by, 331; differentiation and host range of, 332; formation of gossypol in infected tissues of, 3449; hydrolysis of glycosides in axial organs of, 2738; nature of resistance to, 3450; strs. of, 3108; virulence of, 332, 2738.
—, — — + *Thielaviopsis basicola* on, effect of, on, 2740.
—, — *dahliae* in rhizosphere of, effect of microelements on microbial antagonists to, 633.
—, — — on, in U.S.S.R., 1513k; antagonism of *Amoeba albida* in soil to, 2236; biochemical nature of resistance to, 1847j; change in RNA content of leaves infected by, 2235; control, 634, 2236; development of actinomycete antagonists of, 2739; effect of alkaloids on pathogenic properties of, 3452; of amoebae on, 632; of bacteria on seed germination of, 1589; of light on, 630; of tetraene antibiotic 18-80 on, 3455; of, on ascorbic acid in, 628; factors affecting, 629, (?)3454; formation of toxins by, 631; immunological characteristics of, 3107; methods for determining degree of resistance to, 2435; specific react. to, 2435; var. react. to, 629, 2435; virulence of, 2738.
— virus diseases, incidence, mode of transmission, and symptoms of, 2e.
— wilt, control, 3456.
—, *Xanthomonas malvacearum* on, in C. Africa, 1272; Spain, 2032; U.S.S.R., 2940d; as means of entry for boll rot organisms, 2730a; assessment of contamination by, 2731; control, 129, 2731; effect of irradiation on infection by, 2733; of, on bolls, 1272; factors affecting, 1272; genetics of, 339; immunological relationships between plant globulins and, 2612; inoculation of, 129, 2730b; recent literature on, 1594; var. react. to, 2730b.
— textiles, microbial degradation of, in the Tropics, 3657.
Cowpea (*Vigna unguiculata*) aphid-borne mosaic virus, host range, properties, serology and transmission of, 202.
—, bean yellow mosaic virus on, in U.S.S.R., 1142.
—, blackberry mosaic virus can infect, 294[illegible]
— chlorotic mottle virus, properties of, and ribonucleic acid of, 13o.
—, citrus variegation virus on, purification of, 2018.
—, *Coronilla varia* virus on, symptoms of, 3316a.
—, cucumber mosaic virus on, metabolic changes induced by, 2892.
—, *Erysiphe polygoni* on, heat-induced hypersensitivity to, 2183.
—, *Macrophomina phaseoli* on, 2295.
— mosaic virus, comparison of serological tests for, 73.
— — —, electron microscopy of, 5g.
— — —, transmission of, by vectors, 3602.
—, pea mosaic virus on, local lesion host for, 2893.
—, red clover mottle virus can infect, 141.
—, *Rhizobium* on, effect of fungal antibiotics on, 1287.
—, *Robinia pseudoacacia* mosaic virus on, 2844.
—, tobacco ring spot virus on, 280.
4-CPA, effect of, on potato virus disease, 2490.
Cp/Rs in relation to disease potential, 2939a.
Cranberry (*Oxycoccus macrocarpus* and *palustris*) decay, association of fungi and physiologic softening with, 2780.
—, effect of fungicides on pollen germination and fruit yields, 1669.
*—, *Mycosphaerella nigro-maculans* on, Canada, 3384.
Crassulaceae, fungi in rhizosphere of, U.S.S.R., 2998.
Crataegus, *Diplocarpon maculatum* on, U.S.A., 1608; development of apothecia of, 3462.
— diseases, popular account of, 2744.
*—, *Erwinia amylovora* on, in Canada (*Nova Scotia), 1658; Wales, 143.
—, *Gymnosporangium confusum* on, 768.
— *oxyacantha*, *G. confusum* on, geographical distribution of, 768.
Creosote against *Fomes annosus* on pine stumps, 440; as timber preservative, 2865c.
Criconemoides transmitting peach rosette mosaic virus, 3136.
Crinum × *powellii*, *Stagonospira curtisii* on, England, 658.
Crocus, *Botrytis croci* on, in Denmark, 510a.
—, *Urocystis gladiolicola* on, infection cycle and symptoms of, 2038.
Cronartium comandrae on pine, 1118, 2856.
— *comptoniae* on pine, 770, 2856.
— *conigenum* on pine, 1119.
— *flaccidum* on pine, 3233.
— *fusiforme*, abjection of secondary sporidia, 1121.
— —, longevity of aeciospores of, in storage, 1120.
— — on pine, see Pine.
— *quercuum* on pine, 2855, 2856.
— *ribicola* on pine, 13i, 1356, 2537; *Tuberculina maxima* parasitizing, 1757.
— —, ultrastructure of sterigma and sporidium of, 1123.

Crotalaria juncea, *Sclerotium rolfsii* on, in India, 2669.
- *spectabilis*, *Calonectria crotalariae* on, 1159.
- *striata*, (?)as reservoir for *Dioscorea* green banding virus, 1064.
crown gall, see *Agrobacterium tumefaciens*.
C.R.R.I. antibiotic against *Pyricularia oryzae*, 994.
cruciferae, *Corticium solani* on, effect of exudates on, 10a.
- diseases in S.E. Asia & Pacific Region, 1371.
-, *Erysiphe cruciferarum* on, 2395.
-, *Peronospora parasitica* on, genetics of resistance to, 2126.
-, *Plasmodiophora brassicae* on, in Finland, 3314; advisory leaflet on, 1772.
Crumenula sororia on pine, 440.
- *urceolus* on *Vaccinium*, 1046.
Cryptodiaporthe populea on poplar, see Poplar.
Cryptomela acutispora in rhizosphere of barley and oats, 1990.
— — +barley yellow dwarf virus on barley, 1990.
Cryptomyzus ribis transmitting pea mosaic virus, 3378.
Cryptosporella viticola on vine, 2936.
Cryptostroma corticale on timber, 1367, 3240.
Cucumber (*Cucumis sativus*), *Alternaria pluriseptata* on, in Germany, symptoms of, 1167.
—, — *tenuis* on, chlorosis caused by metabolite of, 2985.
—, *Ascochyta cucumis* on, in U.S.S.R., symptoms of, 573h.
—, *Aspergillus* on stored seed of, factors affecting, 2551.
—, bacteria on, migration of, 1415.
—, *Cladosporium cucumerinum* on, in U.S.A., control, 1818; effect of crop rotation on, 2919; formation of perylenequinones in etiolated seedlings of, 2575.
—, *Colletotrichum lagenarium* on, in *Mauritius, 2943b; control, 29a, 531; effect of epiphytic bacteria on germination of, 2920; metabolic changes induced by, 1166.
—, *Corticium solani* on, control, 842a.
— damping-off, effect of soil treatment on, 1468.
— diseases, development of multiple resistant hybrids to, 1814.
—, *Erysiphe cichoracearum* on, in U.S.S.R., 821; control, 820, 838, 1817, 2173; effect of micro-elements on resistance to, 2145; inhibition of, by actinomycetes, 821.
—, *Fusarium* on, 1849q.
—, — *oxysporum* on, in U.S.S.R., 1613v.
—, — — f.sp. *cucumerinum* on, control, 842a.
—, — *solani* on, control, 842a.
—, — — f. *cucurbitae* on, in Netherlands, mating type of, 2348.
—, *Glomerella cingulata* var. *orbiculare* on, sexual expression in, 824.
— green mottle mosaic virus on cucumber in Finland, 1815; effect of, on leaf pigments, 279; inhibition of, by skimmed milk, 278, 914.
— — — — — on *Luffa acutangula*, 817.
— — — — — on tomato, 914.
— — — — — str. on cucumber, 1816; effect of, on leaf pigments, 279; virus particles in sieve tube, sap of, 1816.
—, lucerne mosaic virus on, 2947e.
—, *Moniliopsis aderholdii* on, 1849q.
[Cucumber] mosaic virus on banana, 2f.
— — — on beet, 2202.
*— — — on *Canna*, 1014.
— — — on *Capsicum*, see *Capsicum*.
— — — on celery, 2594d.
— — — on *Chenopodium amaranticolor*, 3706.
— — — on cherry, 2204,
— — — on *Commelina diffusa*, 2f.
— — — on cowpea, 2892.
— — — on cucumber in Finland, 1815; Germany, 1823; U.S.A., 2917; concentration of, 1393; control, 1164; effect of milk powder and skimmed milk on, 278; of trellis method of culture on, 2917; of ultrasonic treatment on, 2594f; hosts of, 1164, 1393, 1823; inactivation of, by photosensitizing dyes, 2662; properties of, 10i; similarity of virus particles of, to broad bean mottle virus, 1937; spread of, 1164; transmission of, by vectors, 1500, 1823, 1932; var. react. to, 1165, 2917.
— — — on currant, 2282.
— — — on *Cyphomandra betacea*, 1172.
— — — on *Gladiolus*, 2039b.
— — — on *Impatiens parviflora*, 3707.
— — — on lupin, 1030.
— — — on maize, 599.
— — — on melon, 509, 2148, 2596.
— — — on *Narcissus*, 1278.
— — — on *Phaseolus lunatus*, 2204.
— — — on *Rhamnus cathartica*, 137.
— — — on rhubarb, 3302.
— — — on spinach, 2594c.
— — — on tobacco, see Tobacco.
— — — on tomato, 509, 1739, 3202.
— — — on tulip, 2369s.
— — — str. on *Hydrangea*, 2443.
— — — — Y on *Nicotiana glutinosa*, 910.
— — — — —, serology of, 13q.
— — — strs., transmission of, 2592j.
— — — — on banana, 2077.
— — — — on tobacco, 281.
— — —, tomato vein necrosis str. on tomato, 3202.
— — — +potato virus Y on tobacco, 2509.
— — — +*Pythium ultimum* on cucumber, 1395.
— — — +tobacco mosaic virus on tomato, 1739.
—, *Mucor* on stored seed of, factors affecting, 2551.
—, muskmelon necrotic spot virus on, in Japan, 213.
—, *Mycosphaerella melonis* on, transmission of, by pruning knives, 825.
— necrosis virus on cucumber in Sweden, 212.
—, papaw mosaic virus on, transmission of, by vectors, 832.
—, *Penicillium* on stored seed of, factors affecting, 2551.
—, potato viruses N and Nr on, differentiation of, 1313.
—, — — X on, inhibition of, by skimmed milk, 914.
—, *Prunus* necrotic ring spot viruses on, serology of, 2778.
—, *Pseudomonas* on stored seed of, factors affecting, 2551.
—, — *lachrymans* on, in Germany, 1844; Poland, 2597; *Queensland, 1168; control, 1817; distribution of, 2597; effect of antibiotics on, 2924; histology of infection by, 2349a; incidence of, 1844; protease of,

2349b; in relation to angular leaf spot, 2349c; quantitative method for assessing seed infection by, 3614.
[Cucumber], *Pseudoperonospora cubensis* on, in U.S.S.R., 1224.
—, *Pythium ultimum* on, 1395, 1849q.
—, — — +cucumber mosaic virus on, synergism between, 1395.
— ring spot virus on cucumber in France, transmission of, by vectors, 1492m.
— — — — on melon, 1492m.
—, sclerotial fungus on, in U.K., identical to fungus in Netherlands, 2922.
—, *Sclerotinia sclerotiorum* on, 842a; effect of trichodermin-3 on, 1877.
—, *Scolecotrichum melophthorum* on, effect of temp. on and persistence of, in plant litter, 573e.
—, *Sphaerotheca fuliginea* on, in Germany, 6; W. Australia, 3301; control, 1396, 3301; effect of, on yield, 6; electron microscopy of haustoria from, 3613; spread and symptoms of, 3301; var. react. to, 3301.
—, tobacco mosaic virus on, inhibition of, by skimmed milk, 914
—, — necrosis virus on, in Czechoslovakia, hosts of, and similarity of, to isolate from *Primula obconica*, 2918.
—, tomato black ring virus on, in Germany, 1823.
—, *Venturia cucumerina* on, in U.S.S.R., symptoms of, 2147.
—, *Verticillium cinerescens* on, effect of temp. on, 1175b.
—, watermelon mosaic virus on, cell inclusions in, and transmission of, to non-cucurbitaceous hosts, 1394.
—, white clover mosaic virus on, in Czechoslovakia, 2761.
Cucumis, gene centres of, in relation to pathogens, 1813.
— *melo*, see Melon.
— — var. *cantaloupina*, see Cantaloupe.
— — var. *conomon* and var. *makuwa*, muskmelon necrotic spot virus on, in Japan, 213.
— *sativus*, see Cucumber.
Cucurbit latent virus on *Chenopodium amaranticolor*, Cucurbitaceae, and watermelon, 2159j.
Cucurbita ficifolia, *Fusarium solani* f.sp. *cucurbitae* on, effect of, and transmission of, by seed, 2146.
— *maxima*, see Squash.
— *pepo*, see Pumpkin, Vegetable marrow.
Cucurbitaceae, *Bacillus mesentericus vulgatus* on, 2923.
—, breeding of, in U.S.S.R., papers on, 81.
—, cucurbit latent virus on, in U.S.A., symptomless hosts of, 2159j.
—, *Cunninghamella echinulata* on, C.M.I. description of, 1471.
— diseases in Queensland, control and symptoms of, 1168.
—, *Erysiphe cichoracearum* f.sp. *cucurbitae* on, 820.
—, — *polygoni* on, control, 2369b.
—, *Fusarium oxysporum* f.sp. *niveum* on, control, 2923.
—, *Malva* vein clearing virus can infect, 1502.
—, *Mycosphaerella melonis* on, in Brazil, imperfect state of, 826.
—, *Phomopsis sclerotioides* on, causing ' black root rot ' previously ascribed to *Sclerotium*, 3612.
[Cucurbitaceae], *Sphaerotheca fuliginea* on, W. Australia, 3301.
—, watermelon mosaic virus 2 on, in U.S.A., 2159j.
**Cucurbitaria ribis* on currant, 1663.
Cufram Z, constituents of, 2604.
Culture collection, catalogue of French, 147
Cultures for exchange by National Agronomic Station of Portugal, 839.
—, list of, at Forest Products Res. Lab., Princes Risborough, 62.
—, mites in, control, 3700.
Cuman against *Corticium theae* on tea, 172
Taphrina deformans on peach, 3503.
Cumin (*Cuminum cyminum*), *Fusarium oxysporum* f.sp. *cumini* on, factors affecting, 1306.
Cunninghamella echinulata in rhizosphere of cotton, 336.
— — on banana, 1053.
— — on Cucurbitaceae, 1471.
Cupravit as soil disinfectant, 3070.
—, effect of, on *Alternaria tenuis*, 1872.
Cupressus lusitanica, *Coniophora puteana* on, in Tanzania, 1745a.
Cupric, see Copper.
Cuprocin against *Peronospora farinosa* on bee 2558.
Cuprocot, effect of, on germination of cotto 2731.
Cupromagic against *Alternaria porri* on onio 206.
Cuproneb against *Ascochyta fabae* on broa bean, 2891.
Cuprosan as seed treatment for potato, 3552
— super D against *Plasmopara viticola*, 2589
— ultra against *Botrytis cinerea* on gran 3625a.
Cuprous, see Copper.
Curcuma longa, see Turmeric.
Currant (*Ribes* spp.), *Arabis* mosaic virus on transmission of, by vectors, 2282.
— aucuba mosaic virus on currant in Czechoslovakia and Netherlands, currant mosa virus, European str., resembling, 2282.
—, blackcurrant reversion virus on, contr 230d, 3138; examination of methods diagnosis of, 1664; malformation by, Scandinavia and U.S.S.R., rare in Britain a Netherlands, 2354l; spread and transmissi of, by vectors, 382, 2282.
—, *Botrytis* on, effect of cycocel on, 695.
—, — *cinerea* on, in U.S.S.R., causing st die-back, 3141; control, 231e.
—, cucumber mosaic virus on, causing gre mottle disease, transmission of, by vecto 2282.
*—, *Cucurbitaria ribis* on, in U.S.S.R., sym toms of, 1663.
—, effect of lime-sulphur on, 3139.
—, gooseberry vein-banding virus on, causi vein banding, 2282.
—, (?)lucerne mosaic virus on, causing int veinal white mosaic, transmission of, vectors, 2282.
— mosaic virus American str., European s distinct from, 2282.
— — — European str., distinct from Americ str., resemblance of to currant aucuba mos in Czechoslovakia and Netherlands, 2282
*—, *Mycosphaerella ribis* on, in the Ir Republic, 3142; *Septoria ribis* conidial st of, 3142.

currant], *Pseudopeziza ribis* on, in *U.S.S.R., 1663; control, 230e, 2311, 1665; effect of cycocel on, 695; effect of, on yield, 2311; factors affecting, 230f; host-parasite relationship of, 3143; symptoms of, 1663.
–, raspberry ring spot virus on, synonymous with red currant spoon leaf virus, transmission of, by vectors, 2282.
–, — — — — str. on, in Germany, relationship of to cherry Pfeffinger virus in Switzerland, 1668.
–, red currant spoon leaf virus on, raspberry ring spot virus on currant synonymous with, 2282.
–, *Rosellinia necatrix* on, severity of, 2939f.
–, *Septoria ribis* on, in the Irish Republic, conidial state of *Mycosphaerella ribis*, 3142.
–, *Sphaerotheca mors-uvae* on, in Bulgaria, 2073; England, 2779; control, 2073; effect of cycocel on, 695; of simazine on, 2779; factors affecting, 696, 3140; genetics of, 1666; method for assessing intensity of infection by, 231m; source of primary infection, 3140.
–, strawberry latent ring spot virus on, transmission of, by vectors, 2282.
–, toxicity of S sprays to, 1667.
—, *Valsa ribesia* on, in U.S.S.R., symptoms of, 1663.
– virus diseases, review of, 2282.
Curvularia eragrostidis on oil palm, 3536.
– *geniculata* on pine, 1353a.
— — on rice, 995.
– *inaequalis* on maize, 2003.
— — on timber, 2865c.
– *lunata* in soil, 54.
— — on *Rauwolfia serpentina*, 3526.
– — on rice, 995, 3092.
– *pallescens* on *Zoysia japonica*, 1286.
– *penniseti* var. *poonensis* on *Pennisetum typhoides*, 314.
– *trifolii* f.sp. *gladioli* on *Gladiolus*, 2039a.
Cuscuta, see Dodder.
Cyamopsis, tobacco ring spot virus on, spec. reac. to, 3603.
— *psoraloides*, *Colletotrichum capsici* f.sp. *cyamopsicola* on, control, 1154, 3605; effect of growth regulating substances on, 1895.
*— —, *Pseudomonas syringae* on, in U.S.A., association of *Xanthomonas cyamopsidis* with, 2140.
— —, sunnhemp mosaic virus on, effect of Ca, Mg, and S nutrition on local lesion formation by, 3604.
— —, tobacco ring spot virus on, susceptibility of, to strs. of, 3603.
— —, *Xanthomonas cyamopsidis* on, in U.S.A., association of *Pseudomonas syringae* with, 2140.
Cyclamen, *Botrytis cinerea* on, control, 3651.
Cycloconium oleaginum on olive, see Olive.
Cyclodecyldimethylmorpholine acetate against *Erysiphe cichoracearum* f.sp. *cucurbitae* on Cucurbitaceae, 820.
Cycloheximide against *Didymascella thujina* on *Thuja*, 2108.
—, effect of, on growth of *Botrytis*, 256.
—, evaluation of fungitoxicity of to *Alternaria brassicicola*, 3328.
—, toxicity of to coffee, 3103.
— thiosemicarbazone against *Valsa cincta* on peach, 2467.
— — in combination against *Valsa* on plum, 2466.
Cycocel against *Verticillium alboatrum* on tomato, 3570; as seed treatment for wheat, 2600b.
—, effect of, on *Botrytis*, mites, *Pseudopeziza ribis*, and *Sphaerotheca mors-uvae* on currant, 695; on *Tilletia caries* on wheat, 2600b.
— in combination against *Tilletia caries* and *T. foetida*, 3403; as seed treatment for wheat, 2600b.
Cydonia oblonga, see Quince.
Cylindrocarpon destructans, correct name for *C. radicicola*, 1228a.
*— *effusum* on pineapple, 2943b.
— *ehrenbergii* on clover, 2763.
— *radicicola*, *C. destructans* correct name for, 1228a.
— — on lily, 351.
— —, production of radicicol and radicicolin by, 1196.
Cylindrocladium crotalariae, *Calonectria crotalariae* perfect state of, 1159.
— *floridanum* on peach, 2468.
— *scoparium*, *C. floridanum* distinct from, 2468.
— — in soil, 273, 2316.
— — on *Eucalyptus*, 1341.
— — on *Liriodendron tulipifera*, 1111.
— — on pine, 2848.
**Cylindrosporium concentricum* on swede, 510a.
— *ilicicola*, *C. floridanum* distinct from, 2468.
— *sesami* on sesame, 1854g.
Cymadothea trifolii, associated with *Pseudomonas syringae* on clover, 362.
— — on clover, 2053.
— — on fodder grasses, 1022.
Cymbidium mosaic virus on *Cassia occidentalis*, 2206.
— — — on *Cattleya*, 648.
— — — on *Cymbidium*, 3635b; in S. Australia, 10h; (?)isolation, properties and purification of, 353.
— — — on *Gomphrena globosa*, 2206.
— — — + tobacco mosaic virus, orchid str., on orchid, 2206.
—, *Odontoglossum* ringspot virus on, in Japan, identification of, 1280.
—, tobacco mosaic virus on, isolation, properties and purification of, 353.
—, — — — str. on, in S. Australia, 10h.
Cynara scolymus, see Artichoke.
Cynkotox against plant diseases, 1176d.
Cynodon dactylon, *Cochliobolus stenospilus* on, effect of light and darkness on sporulation of, 2945a.
— —, *Helminthosporium rostratum* on, 2051; in New S. Wales, 2357e.
— —, *Puccinia cynodontis* on, effect of light and temp. on and races of, 2450.
— —, *Xanthomonas cynodontis* on, in India, symptoms of, 2760.
Cyphomandra betacea, cucumber mosaic virus on, in India, symptoms of, 1172.
Cypress, see *Cupressus*.
Cyprex A against *Venturia inaequalis*, 1289, 2771.
— —, toxicity of, to apple, 2771.
Cypro against mites in cultures, 3700.
Cysol against *Ascochyta fabae* on broad bean, 2891.
Cystopus tragopogonis on sunflower, 1309.
— — on *Tragopogon pratensis*, 1309.
— — f.sp. *helianthi*, new form of *C. tragopogonis* on sunflower, 1309.

Cytokinins, effect of, on disease caused by *Corynebacterium fascians*, 851; on phloem-transport in bean and wheat, 872.
— in relation to *Agrobacterium tumefaciens*, 850.
Cytophoma pruinosa on ash, 160.
Cytospora ambiens and *C. platani*, nomenclatural and taxonomic notes on, 3696.
— *rhoina* on *Rhus typhina*, 2083.
— *sacchari* on sugarcane, 1094.
Cytosporina verrucosa on *Pelargonium capitatum*, 1678.
— *vitis* on vine, 2587.

2,4-D against *Cercospora coffeicola* on coffee, 2023b.
—, (?)causing small leaf disease of cotton, 1596.
—, effect of, on development of *Claviceps purpurea*, 1897; on *Verticillium alboatrum* on tomato, 3570.
— in combination, effect of, on development of *Claviceps purpurea*, 1897.
D735 against *Puccinia striiformis* and *Urocystis agropyri* on *Poa pratensis*, *Ustilago striiformis* on *Agrostis palustris*, *Dactylis glomerata*, and *Poa pratensis*, and as soil disinfectant, 28.
— ineffective against *Puccinia coronata* and *P. graminis* on oats, 2161f.
— versus F461, 28.
DAC 469 in combination, effect of, on soil micro-organisms, 1468.
— 2787, see Daconil 2787.
Daconil against *Cercospora beticola*, 3266; melon diseases, 1819; *Pseudoperonospora cubensis* on squash, 3300; *Stemphylium solani* on tomato, 1740.
— 2787 against *Alternaria solani* on potato, 1077; *Botrytis cinerea* on *Pelargonium*, 659; on strawberry, 1673; *Cercospora beticola*, 3265; *Cladosporium cucumerinum* on cucumber, 1818; *Corticium theae* on tea, 1722; *Phytophthora infestans*, *Uncinula necator*, and *Venturia inaequalis*, 2369b; as a bulb treatment for lily, 3114.
— —, effect of, on *Alternaria solani* on tomato, 13e; on fruit yield of cranberry, 1669.
— — versus captan, karathane, maneb, and micronized S, 2369b.
— (75W) in combination as bulb treatment for lily, 3114.
Dactylaria clavispora and *D. thaumosia*, vitamin requirements of, 3326.
Dactylella doedycoides, formation and closure of constricting rings of, 3325.
Dactylis glomerata, *Helminthosporium* on, 1922.
— — mottle virus on *Dactylis glomerata*, hosts, properties, and transmission of, 1628.
— —, *Puccinia striiformis* f.sp. *dactylidis* on, comparison of, with *P. striiformis* f.sp. *poae* on *Poa pratensis*, 2451.
— —, *Ustilago striiformis* on, control, 28, 2251.
Dactylorchis purpurella, *Corticium solani* on, 2381; forming mycorrhiza, ecology and physiology of, 244.
— —, mycorrhiza of, carbohydrate translocation in, 2983.
— —, *Rhizoctonia repens* on, forming mycorrhiza, ecology and physiology of, 244.
Dactynotus ambrosiae transmitting sugarcane mosaic virus, 1712.
Daffodil, see *Narcissus*.
Dahlia mosaic virus, transmission of, by vectors, 1933.
— virus in Brazil, resemblance of, to str. of tomato spotted wilt virus, 1609.
— *variabilis*, *Sphaerotheca fuliginea* f.sp. *dahliae* on, 3459.
Dalbergia paniculata, *Scopellopsis dalbergiae* on, in India, distinct from *Marasmius pterocarpi*, 2320.
— *sissoo*, *Glomerella cingulata* on, in India, 2
Damping-off of beet, 1468; Coniferae, 4[illegible] 3226; cucumber, 1468; pea, 480; pine, 3225a,b, 3227; tomato, 436a.
Damson (*Prunus insititia*), *Prunus* necrotic ring spot virus, serological diagnosis on, 2778.
Darluca filum in Estonia, geographic distribution of, 556.
Date palm (*Phoenix dactylifera*) diseases, review of, 2089.
— —, *Graphiola phoenicis* on, in Nigeria, 140[illegible]
Datura, *Alternaria crassa* on, technique for re-activating sporulation of, 3014.
—, *Coronilla varia* virus on, symptoms of, 3316a.
— malformation virus, hosts of, 1239.
*—, *Phyllosticta daturicola* and *P. julia* on, in Czechoslovakia, 3355.
—, stolbur virus on, fluorescence in phloem cell walls of, 1492j.
— *bernhardii* as indicator for potato viruses, 1685.
— *metel*, *Bromus* mosaic virus on, distinguishing different isolates of, 2049.
*— —, *Phyllosticta solani* on, in India, symptoms of, 3156.
— *stramonium*, *Agrobacterium tumefaciens* on, effect of boric acid on, 3324c; efficiency of tumour induction by, 3324b; phytopathogenic properties of different strs. of, 141[illegible] plastid development during tumour formation in, 1231h.
— — as indicator for potato viruses, 1685.
—, *Bromus* mosaic virus on, 2755; distinguishing different isolates of, 2049.
*— —, *Cercospora jamaicensis* on, in India, symptoms of, 346.
— —, *Corynebacterium fascians* can infect, 1102.
— —, papaw yellow crinkle virus can infect, 2483.
— —, potato leaf roll virus on, transmission by vectors, 403.
— —, stolbur virus on, hosts of and transmission of, by grafting, 1492k.
— —, tobacco mosaic virus on, effect of actinic and UV irradiated strs. of on, 2663; lesion development and distribution of, 1325.
— —, — — — str. pp on, 3540.
— — var. *tatula*, potato virus Y str. c pathogenicity of and study on, 1688.
— — — —, — — — str. C not infecting, 408.
Daucus carota, see Carrot.
Dazomet against *Plasmodiophora brassicae* on cabbage, 1373b.
DBCP as soil treatment, 165, 1158.
DCB as soil disinfectant, 156.
DCMO as soil disinfectant, 2251.
— in combination against *Tolyposporium penicillariae* on *Pennisetum glaucum*, 3087.
— versus DCMOD, 2251.
DCMOD against *Puccinia carthami* on safflower, 3529a; as soil disinfectant, 2251.

CMOD] versus DCMO, 2251.
in combination against *Tolyposporium enicillariae* on *Pennisetum glaucum*, 3087.
NA against *Sclerotinia laxa* on almond, 506; *Sclerotium rolfsii* on sweet potato, 098.
TFA, effect of, on fungi and on *Uromyces ppendiculatus* on bean, 3653.
as soil treatment, 165.
DAB against *Sphaerotheca pannosa* on rose, 938b.
DCB against *Botrytis cinerea* on strawberry, 369t.
effect of, on flavour of canned strawberry, 369t.
DT against wheat striate mosaic virus, 3045.
in combination against *Monilia roreri* on acao, 2599e.
ightoniella torulosa on banana, 3516.
lan against *Blumeriella jaapii* on cherry, 045; *Venturia inaequalis*, 1180b.
ineffective against *Pseudomonas syringae* on cherry, 1045.
lphacodes transmitting wheat striate mosaic virus, 3045.
pellucida transmitting *Arrhenatherum elatius* dwarf virus, 2757; oat sterile dwarf virus, 063; (?)wheat bright yellow mosaic stripe, 3044; wheat striate mosaic virus, 3045; wheat striate mosaic virus, European str., 1526.
striatella, electron microscopy of particles of maize rough dwarf virus in, 1556a, b.
— transmitting maize rough dwarf virus, 108, 1524a,b,c; northern cereal mosaic virus, 2675; oat pseudo-rosette virus, 1515; rice stripe virus, 11h.
Delphinium elatum, *Diplodina delphinii* on, in Rumania, 1018.
emosan as seed treatment for cotton, 1268.
endroctonus ponderosae on pine, 3586.
endrophoma obscurans on strawberry, 1050.
eodar (*Cedrus deodara*), *Cenococcum graniforme* on, forming mycorrhiza in India, 1440.
ermea balsamea on *Abies balsamea*, 158a.
esmodium diffusum, groundnut bunchy top, chlorosis, and ring mottle viruses on, 1388.
euterophoma tracheiphila on citrus, 1847k, 2722.
— on lemon and orange, 2721.
exon against *Pythium* on sugarcane, 2100d; as soil disinfectant, 1784a, 3148, 3522a.
, effect of, on *Aphanomyces cochlioides* on beet, 1784c; on soil microflora, 12f; on soil micro-organisms, 1468.
versus OM 2424, 2100d.
in combination as seed treatment for beet, 184.
——, effect of, on soil micro-organisms, 1468.
iabrotica longicornis transmitting *Gibberella fujikuroi*, 3634g.
undecimpunctata transmitting radish mosaic virus, 2870.
1-diacetoxyprop-2-ene against brown root rot of tomato, 1175k.
ianthus caryophyllus, see Carnation.
iaporthe alleghaniensis on birch, 3575.
citri on citrus, see Citrus.
— on orange, control, 3438.
rohois on *Rhus typhina*, 2083.
tetrastaga f.sp. *mori*, ascigerous state of *Phomopsis mori*, 1749.
Diatretyne nitrite, production of, by *Leucopaxillus cerealis*, 2979.
Diatrype stigma associated with *Acer saccharum* sunscald canker, 3634m.
Dibotryon morbosum on plum, 1296.
1,2-dibromoethane in combination against *Fusarium oxysporum* f.sp. *lycopersici* on tomato, 156.
Dichlofluanid against *Botrytis* on strawberry, 1051, 3629f; *B. cinerea* on strawberry, 231d, 1673, 2354f, 2369t; on tomato, 1175j.
—, effect of, on canned fruit, 2369t.
—, translocation of, in apple, 2263.
— versus difolatan, 2354f.
Dichlone as seed treatment for cereals, 89; for flax, 638.
—, effect of, on *Corticium solani*-infected potato, 1180a.
— in combination as seed treatment for beet, 184.
Dichloran against *Botrytis cinerea* on lettuce, 26; strawberry, 1673; *B. fabae* on broad bean, 26; *Sclerotinia minor* on lettuce, 58c; *Sclerotium cepivorum* on garlic, 3293; as soil disinfectant, 58c.
—, effect of, on *Botrytis cinerea*, 26.
—, toxicity of, to lettuce, 58c.
— versus quintozene, 3293.
2,4-dichloroanisole, effect of, on *Verticillium alboatrum* on tomato, 3570.
Dichlorofluanid against *Botrytis cinerea* on strawberry, 231d.
Dichloronitroaniline against *Corticium solani* and *Sclerotium cepivorum*, 838.
— versus quintozene and thiabendazol, 838.
2,4-dichlorophenoxyacetic acid, effect of on susceptibility of barley to *Puccinia hordei*, 1544.
1-(3,4-dichlorophenyl)-2-actylhydrazine against *Pyricularia oryzae*, 531.
1-3 dichloropropene, 1-2 dichloropropane mixture against *Pythium arrhenomanes* in soil, 3351.
Dichlorotetrafluoroacetone, see DCTFA.
Dichromate in combination as timber preservative, 2865c.
Didecyldimethyl ammonium bromide, see DDAB.
**Didymascella thujina* on *Chamaecyparis lawsoniana* and Coniferae, 2117.
—— on *Thuja*, 2108.
—— on *Thuja occidentalis*, 2117.
—— on *Thuja plicata*, 2117, 3589.
**Didymella applanata* on raspberry, see Raspberry.
*— *exitialis* on maize, 3632b.
— *lycopersici* on tomato, 917, 1332, 1335.
Dieffenbachia, *Erwinia chrysanthemi* strs. on, pathogenicity and symptoms of, 2600d.
—, *Leptosphaeria* on, resemblance of, to *L. dumetorum* or *L. senecionis*, 650.
— *amoena*, (?)*Pectobacterium parthenii* on, 2438.
**Diehliomyces microporus* on mushroom, 2928.
Diervilla florida, *Armillaria mellea* on, in U.S.S.R., 643.
Diethyl-dithiocarbamate, use of, for transmitting vine fanleaf virus to herbaceous plants, 3624.
Diethyl ester IA against *Diplocarpon rosae* on rose, *Erysiphe cichoracearum* on cucumber, *E. graminis* on turf, fungi on fruit, and *Sphaerotheca macularis* on rose, 2173.

o,o-diethyl *S*-benzyl thiophosphate, see Kitazin.
o,o-diethyl phthalimido phosphorothioate, alone and in combination, against *Podosphaera leucotricha* and *Venturia inaequalis*, 3129.
Difolatan against *Botrytis cinerea* on lettuce, 26; on strawberry, 2354f; *B. fabae* on broad bean, **26**; *Cladosporium cucumerinum* on cucumber, 1818; *Fabraea maculata* on pear, 2271; *Gloeodes pomigena* on apple, 1033; *Glomerella cingulata* on apple, 1033; on cacao, 1519e; on coffee, 1267b, 2726e; *Phytophthora infestans* on potato, 2939c; *P. palmivora*, 86, 1521; *Pleospora bjoerlingii* and *Pythium ultimum* on beet, 182; *Sclerotinia fructicola* on stone fruit, 376; *Venturia inaequalis*, 231s; as seed treatment for beet, 787; for *Festuca* and *Lolium*, 3310e.
—, effect of, on *Botrytis cinerea*, 26; on soil micro-organisms, 1468.
—, inhibition of growth of *Phytophthora infestans* by residues of, in soil, 1075.
— versus Cu, 2726e; dichlofluanid, 2354f; harvestan, 3310e.
— in combination against *Glomerella cingulata* and *Hemileia vastatrix* on coffee, 3445.
— 80W against groundnut collar rot, 1386a.
Digitalis lanata, *Cercospora digitalidis* on, in India, 1063.
——, tobacco mosaic virus *Plantago* str. on, in Rumania, 2294.
Digitaria, relationship between incidence of and coconut bitten leaf, 2296.
— *decumbens* stunt virus on *Digitaria* in Guyana, 139; Malaya, 512e; spec. reac. to, 139.
Digitonin, effect of, on growth of *Pythium*, 2180.
—, inhibition of growth of *Colletotrichum* by, 2180.
Dihuang degeneration virus on *Rehmannia glutinosa* var. *huaichingensis*, 1505.
2,3 - dihydro - 5 - carboxanilido - 6 - methyl - 1, -4-oxanthiin-4, 4-dioxide, see DCMOD.
Dill (*Anethum graveolens*), *Alternaria umbellifericola* on, 1305.
Dilophospora alopecuri on wheat, 93.
Dimethyl sulphoxide in combination against *Valsa* on plum, 2466.
2,4 - dinitro - 6 -caprylphenyl - 1 -(4 - pentenoate) against *Erysiphe polygoni* on bean, 2600a.
Dinitro-orthocresol as seed treatment for watermelon, 2149.
Dinitrophenol in combination as timber preservative, 2865c.
Dinitrophenols against *Podosphaera leucotricha*, 3130.
2,4-dinitrophenyl n-pentyl sulphone against *Venturia inaequalis*, 230n.
—, biological and chemical properties of, 230n.
2,4-dinitrophenyl 4-tolyl sulphoxide against *Venturia inaequalis*, 230n.
—, biological and chemical properties of, 230n.
Dinitrorhodanebenzene against *Venturia inaequalis*, 1032e, f.
— in combination against *Kabatiella caulivora* on clover, 668.
— fungicidal mixture against *Alternaria*, 2963.
Dinobuton against *Podosphaera leucotricha*, 3129.
Dinocap against *Erysiphe cichoracearum* on tobacco, 2311; *Podosphaera leucotricha*, 1650, 2459, 3129.
[Dinocap] versus morestan, 2311.
Dioscorea, see Yam.
— green-banding virus on yam in Puerto R
(?)*Crotalaria striata* as reservoir for, re
blance of symptoms of to yam mosaic v
transmission of, 1064.
Dioxanes and dioxolanes, fungitoxicity of,
Diphenyl, dosage-response relationship
Hypomyces to, 859.
— in combination, effect of, on fungi on ci
3440.
— pads, alone and in combination ag
citrus fruit decay, 617.
Diphenylamine, see DPA.
Diplocarpon earlianum on *Fragaria vesca*, 2
—— on strawberry, see Strawberry.
— *maculatum* on *Crataegus*, 1608, 3462.
— *rosae* on rose, see Rose.
**Diplodia macrospora* on maize, 3632b.
— *maydis* on fodder grasses, 1022.
—— on maize, 604, 605, 979.
— *natalensis*, *D.* on apple different from,
——, effect of sodium orthophenylphena
development of, 1195.
—— on citrus, 1579, 1580, 3440.
—— on orange, 325.
— *opuntiae* on cactus, 2037.
— *pinea* on pine, 2848.
**Diplodina delphinii* on *Delphinium el*
1018.
Dipropylfumacide against *Fusarium* on C
arietinum, 2891.
Disyston as soil disinfectant, 2511.
Dithane M20, effect of, on sclerotial deve
ment and germination of *Claviceps m*
cephala on *Pennisetum typhoideum*, 2709.
— M-22 against *Botrytis allii* and *B. septos*
on onion, 3292.
— M-45 against *Cercospora beticola* on
1780; *Glomerella cingulata* on cacao, 15
Mycosphaerella melonis on cucurbits, 82
——, inhibition of *Curvularia eragrostidis*
3536.
— Z-78 against *Botrytis allii* and *B. septos*
on onion, 3292; *Pyricularia oryzae* on
2428; *Uromyces viciae-fabae* on lentil, 20
Dithianon against *Pseudomonas mors-pruno*
on plum, 2354; *Venturia inaequalis*, 2
3129; *V. pirina*, 230m.
Dithiocarbamate, decomposition of, 1873.
— injury to orange, 3438.
— derivatives, toxicity of, to *Alternaria te*
and *Botrytis allii*, 1875.
Dithiocarbamates against *Ascochyta ph*
lorum, 3276; *Guignardia citricarpa* on ora
3438; *Mycosphaerella melonis* on cucum
825; *Tilletia foetida*, 3403.
—, toxicity of, to fungi, 1874.
— versus Cu, 1032b.
— in combination against *Alternaria longipe*
tobacco, 1327.
Di-trapex, effect of, on mycorrhiza of be
pine, and spruce, 1889.
Ditylenchus dipsaci, effect of, on reactio
lucerne to *Corynebacterium insidiosum*, 2
Diuron, effect of, on growth of *Corticium so*
846; on incidence and severity of *Cercospo*
herpotrichoides and *Corticium solani*
wheat, 928.
DMSO against iron chlorosis in avocado p
392.
—, effect of, on peach mosaic and *Pr*
necrotic ring spot viruses on peach, 3502.

(ISO], toxicity of, to peach, 3502.
use of, on elm, 3215.
n combination against *Glomerella cingulata* nd *Hemileia vastatrix* on coffee, 3445.
OC against *Pseudopeziza medicaginis* on cerne, 1639; *Valsa nivea* and *V. sordida* on oplar, 449; as soil disinfectant, 676.
OP, effect of, on apple and pear, 2062.
OPC against *Podosphaera leucotricha* on ear, 2270.
effect of, on apple and pear, 2062; on conidia f *Oidium begoniae* var. *macrosporum* and *Incinula necator*, 3654.
njury to pear, 2270.
lartia orientalis as reservoir for tomato stolbur virus, 2523.
dder (*Cuscuta*) transmitting papaw yellow rinkle virus, 2483; *Robinia* mosaic virus, 346; tomato big bud virus, 2483.
dine against *Fabraea maculata* on pear, 2271; *Fusicladium effusum* on pecan, 2114; plant iseases, 1176d; *Venturia inaequalis*, 1032d, 180b, 1649.
inhibition of *Pezicula malicorticis* by, 1034.
injury to pear, 2062.
in combination against apple russeting, 232a.
acetate against *Venturia inaequalis*, 3128.
—, binding and uptake of, by fungal spores, 55.
— injury to apple and pear, 2062.
—, redistribution of, by rainfall, 3128.
—, translocation of, in apple, 2263.
— in combination against *Venturia inaequalis*, 2263.
olichos, *Ascochyta phaseolorum* on, in Queensland, symptoms of, 3276.
enation mosaic virus on *Dolichos lablab*, concentration, respiration and symptoms of, 1385; factors affecting, 2592b.
othidella ulei on *Hevea* rubber, 1088, 1089f.
othiorella rosatii on *Pelargonium capitatum*, 1678.
othistroma acicola, *Scirrhia acicola* perfect state of, 3585.
pini, see *Scirrhia pini*.
— var. *keniensis* on pine, 2941d, 3228.
— — *linearis* and *pini* on pine, 2941d.
owicide A-hexamine against citrus fruit decay, 617.
PA against apple superficial scald, 1292.
, effect of, on apple superficial scald, 1655.
, inhibition of *Pezicula malicorticis* by, 1034.
versus ethoxyquin, 1655.
Dracaena, *Phyllosticta dracaenae* on, in Canada, 3384.
rechslera verticillata, proposed as name for hyphomycetous state of *Pyrenophora semeniperda*, 925.
repanopeziza populorum and *D. punctiformis* on poplar, 2532.
rosophila transmitting *Penicillium digitatum*, 3441.
uchesnea indica, *Phytophthora fragariae* on, resistance to, 3390.
ulcamara mottle virus, resemblance of to turnip yellow mosaic group, serological relationship of to *Ononis* yellow mosaic and potato Andean latent virus, 78.
Dupont soil fungicide, ineffective as soil treatment against *Phytophthora* on cacao, 1519b.
Duter against *Cercospora beticola*, 3266; *Phytophthora palmivora*, 86, 1521.
—, effect of on germination of soybean, 2898.
Dyrene against *Alternaria longipes* on tobacco, 1327.
Dysaulacorthum pseudosolani transmitting cucumber mosaic virus, 1823.

Echinochloa crus-galli, *Helminthosporium pedicellatum* on, 2000.
— —, maize rough dwarf virus can infect, 1524c.
— —, rice dwarf virus on, electron microscope study of, 911.
— *phyllopogon*, maize rough dwarf virus can infect, 1524c.
EDTA, effect of on distribution of tobacco mosaic virus on tomato roots, 1330.
Eggplant (*Solanum melongena*), *Alternaria solani* on, variability in, 1923.
—, *Fusarium solani* on, inoculum potential of, 1169.
*—, *Glomerella cingulata* on, in Canada, 3384.
—, *Myrothecium roridum* on, 2927.
—, *Ozonium texanum* var. *parasiticum* on, *Meloidogyne javanica* associated with, 1826.
—, *Phytophthora nicotianae* var. *parasitica* on, hosts of, infectivity, and sporulation of, 218.
—, *Pseudomonas solanacearum* on, in France, 2596; Gabon, 1941; Reunion, 1179.
—, reaction to ' yellows ' type viruses, 838.
—, stolbur virus on, 717, 1492k; in U.S.S.R., 830; fluorescence in phloem cell walls of, 1492j; symptoms of, 830.
—, *Verticillium* on, 2623; in France, 509, 2596; breeding against, 509.
—, — *alboatrum* on, in U.S.S.R., symptoms of, 830.
—, — *dahliae* on, in Israel, 1905; U.S.S.R., 502; control, 1825; effect of root nutrition of on, 502; factors affecting, 1905.
El-241 against powdery mildews, 3634b.
Elaeagnus angustifolia, *Botryodiplodia theobromae* on, in U.S.A., 3634n.
— —, *Fusicoccum elaeagni* on, 3113.
Elaeis guineensis, see Oil Palm.
Elcide 73 against *Ceratocystis paradoxa* on sugarcane, 1710d.
— — versus aretan, 1710d.
Elder, see *Sambucus*.
Electron microscopy, 1966, vol. II, Biology, 1231.
— —, method for preparing plant tissues for 1489.
— — of *Agrobacterium tumefaciens*, 1186; *Aphanomyces euteiches*, 189; *Arabis* mosaic virus, 2654; *Armillaria mellea*, 2636; barley stripe mosaic virus, 911, 953, 954; *Bromus* mosaic virus, 1231d; *Chenopodium* star mottle virus, 12n; clover big vein virus, 3377, 3708; clover yellow mosaic virus, 12z; *Cochliobolus miyabeanus*, 1899; *C. victoriae*, 306; cowpea mosaic virus, 5g; cucumber mosaic virus, 910, 2203; *Erysiphe cichoracearum*, 13a, 707; *Fusarium culmorum*, 1227a,b; hop infectious chlorotic mosaic virus, 1303; intracellular plant virus infection, 1231e; maize rough dwarf virus, 1556a,b, 2654; *Narcissus* mosaic virus, 3380; *Neurospora crassa*, 2969; *Odontoglossum* ringspot virus, 5g; onion yellow dwarf virus, 2908; *Opuntia* mosaic virus, 5g; *Plasmodiophora brassicae*, 3256; potato spindle tuber virus, 13b; potato virus X, 911; *Pyricularia oryzae*, 2714, 3422; rhubarb virus, 2161l; rice dwarf virus, 235d, 911; rice grassy stunt virus, 992f;

soil micro-organisms, 2399; soybean mosaic virus, 1155; *Sphacelotheca reiliana*, 3009; *Sphaerotheca fuliginea*, 3613; sweet potato internal cork virus, 1231c; *Tilletia*, 1967; tobacco mosaic virus, 5g, 421, 736, 911; tobacco rattle virus, 1934; turnip yellow mosaic virus, 2654; *Ustilaginoidea virens*, 1899; *Ustilago maydis*, 3009; vine viruses, 503; wheat striate mosaic virus, European str., 1526; wheat viruses, 2161b.
Elettaria cardamomum, *Sphaceloma cardamomi* on, in India, 1061
**Eleusine coracana*, *Helminthosporium rostratum* on, 1263.
*— —, *Ozonium texanum* var. *parasiticum* on, in India, 2011.
— —, *Xanthomonas eleusineae* on, in India, 3632e.
Elm (*Ulmus*), *Ceratocystis ulmi* on, in U.S.A., 2837, 3577; control, 3215, 3577; distribution of spores, 2322, 2836; effect of, on respiration, 1340; factors determining resistance to, 2835; intensity of transpiration rate of, 753; method for inoculating, 1110; summer trimming associated with, 2837; transmission of, by vectors, 2837.
—, *Fusarium solani* on root cuttings of, 3578.
— mottle virus on elm in Europe, 442.
*—, *Phyllosticta lacerans* on, in Czechoslovakia, 3355.
— ringspot and stripe viruses on elm, in Europe, 442.
Elsinoe ampelina on vine, 513, 1513t.
— *fawcettii* on citrus, 323, 919.
— *piperis* on *Piper capense*, 1680.
*— *piri* on apple, 1944.
— *rosarum* on rose, 1021.
— *veneta* on raspberry, 573a, 2478.
Elvaron against *Botrytis cinerea* on strawberry, 2479.
—, see also Dichlofluanid.
Elymus, *Puccinia striiformis* on, in U.S.A., oversummering of, 2417.
— *canadensis*, *Hordeum* mosaic virus on, in Canada, reservoir of infection for, 1626.
Empoasca (?)*flavescens* in relation to stolbur virus, 717.
— *papayae* transmitting papaw bunchy top virus, 2599b.
Endive (*Cichorium endivia*), *Alternaria dauci* f.sp. *endiviae* on, 1812.
—, cucumber, lettuce, and lucerne mosaic viruses can infect, 1492e.
—, immunity of, to *Erwinia carotovora*, 816.
—, *Pseudomonas cichorii* on, 3116.
— viruses, susceptibility to, 838.
Endogone on *Agathis australis* forming mycorrhiza, 2379.
— *fasciculata* on *Liquidambar styraciflua* and *Liriodendron tulipifera* forming mycorrhiza, 1892.
— *lactiflua* on pine forming mycorrhiza, 868.
Endosulphan and endrin, against vectors of blackcurrant reversion virus, 3138.
Entomophthora occidentalis, *Zoophthora phalloides* previously identified as, 1428.
— *vomitoriae* on flies in Europe, renamed *Zoophthora vomitoriae*, 1427.
Entyloma compositarum on *Gaillardia aristata*, 3463.
*— *helosciadii* on celery, 2358d.
— *korshinskyi* on barley, 2694.
— *oryzae* on rice, 995, *1242.
EP 201 against *Fusarium oxysporum* [illegible] *lycopersici* on tomato, 156; as soil disinfec[illegible] 156, 1825.
EP 297 as soil disinfectant, 156.
Ephelis oryzae on rice, 3097.
Epicoccum nigrum on pine, 1126.
EPTC, effect of, on growth of *Cort*[illegible] *solani*, 846.
Equipment, microbial degradation of, i[illegible] tropics, 3657.
Equisetum arvense, *Verticillium dahliae* o[illegible] Canada, 922.
Erad against *Fusicoccum putrefaciens* [illegible] *Vaccinium corymbosum*, 2476.
Ergosterol, reversal of nystatin inhibiti[illegible] *Colletotrichum lagenarium* by, 2180.
Eriophyidae transmitting wheat streak mo[illegible] virus, 1247.
Erwinia, taxonomy of, 1184.
— *amylovora*, associated with canker of *M*[illegible] 2041.
— — in England, spread of, 143.
— — on apple, see Apple.
— — on *Crataegus*, 143, *1658, 3631.
— — on pear, see Pear.
— — on tobacco, 1657, 2168.
— —, oxidative metabolism of carbohy[illegible] by, 1184.
— —, resemblance of external symptom[illegible] *Pseudomonas cerasi* on stone fruit tre[illegible] 3509.
— —, serological comparison of *E. nigrifl*[illegible] with, 1419; serological method for diagno[illegible] 3483.
— *ananas*, reclassified as *E. herbicola*, 29[illegible]
— *aroideae* in cotton bolls, 636.
— — in soil, 3321.
— —, inhibition of, by plants, 1198.
— —, method of differentiating *E. atrose*[illegible] from, 1420.
— — on carrot and Chinese cabbage, 332[illegible]
*— — on coriander and pear, 852.
— — on potato, 1318, 3552.
— —, oxidative metabolism of carbohyd[illegible] by, 1184.
— —, pectolytic activity in, 3643.
— —, serological comparison of *E. nigrifl*[illegible] with 1419.
— *atroseptica*, method of diffe entiating [illegible] *E. aroideae*, 1420.
— — on potato, see Potato.
— —, serological comparison of *E. nigrifl*[illegible] with, 1419.
— *cancerogena* on poplar, 2534.
— *carnegieana*, effect of DCTFA on, 3653
— *carotovora*, antagonism of *Pythium* to, [illegible]
— —, inhibition of, by plants, 1198.
— — on banana, 1516.
— — on *Capsicum*, 1170.
— — on coriander, 1677, 2486.
— — on lettuce, 816.
— — on lupin, 3125.
— — on potato, see Potato.
— — on tomato, 1742, 3572.
— —, oxidative metabolism of carbohyd[illegible] by, 1184.
— —, resemblance of bacteria from Umb[illegible] ferae to, 242.
— —, serological comparison of *E. nigrifl*[illegible] with, 1419.
— — f.sp. *parthenii* on *Parthenium argenta*[illegible] 3554.
— — f.sp. *zeae* on maize, 2004.

vinia] *herbicola, Bacterium herbicola, B. typhi vum, E. lathyri*, and *E. ananas* reclassified , 2958.
– on lucerne, 3123.
–, *Xanthomonas* spp. synonymous with, 965a.
athyri, reclassified as *E. herbicola*, 2958.
angiferae on mango, 3150.
ilietiae, distinct from *E. herbicola*, 2958.
igrifluens on walnut, 2845.
–, serological comparison of, with other *E.* ecies, 1419.
proteamaculans, *Xanthomonas proteamaculans* classified as, 2365a.
quercina, causing oak drippy nut disease, 323.
rubrifaciens on walnut, 2845.
rubrisubalbicans and *E. salicis*, C.M.I. escription of, 2960.
sinocalami on *Leleba oldhami* and *Sinocalamus latiflorus*, 340.
stewartii, C.M.I. description of, 2960.
uredovora, distinct from *E. herbicola*, 2958.
siphaceae in Europe, book on, 3007.
n France, ecology of, 1478; Mongolia, 895; umania, 2631.
Cicinnobolus on, 3637.
ontogeny of ascocarp of species of, 560.
siphales in Hungary, 555a; U.S.S.R., 918.
genetics of, 516m.
shrivelling v. collapse of conidia of, 3679.
siphe betae on beet, see Beet.
cichoracearum, control, 3634.
— on cucumber, see Cucumber.
— on melon, see Melon.
— on *Mentha*, 3033.
— on *Nicotiana rustica*, 1178b.
— on squash, 3300.
— on sunflower, 122, 707.
— on tobacco, see Tobacco.
—, ontogeny of ascocarp of, 560.
—, water content of conidia of, 253.
— f.sp. *cucurbitae* on cucumber, cucurbits, nd melon, 820.
— var. *lupini* on lupin, 1030.
communis, *E. betae* preferred as name for, 138.
—, revision of, 2395.
cruciferarum on Cruciferae, 2395.
graminis, effect of organic substances on germination of conidia of, 1910.
—, FC-43 as carrier for spores of, in noculation studies, 3042.
—, geographical distribution of, 2160k; of aces of, 2160j.
— in the air, 2160j.
— in Italy, 588.
—, inhibitory effect of conidia of, on germination of, 3341.
— on barley, see Barley.
— on cereals, 2356, 2382.
— on grasses, 1513e.
— on oats, see Oats.
— on rye, 1513e.
— on turf, 2173.
— on wheat, see Wheat.
—, survival of, 2160j.
—, water content of conidia of, 253.
polygoni, effect of carbon dioxide and oxygen on germination of conidia of, 3340.
—, *E. betae* preferred as name for, 1138.
— on bean, see Bean.
— on clover, see Clover.
[*Erysiphe polygoni*] on cowpea, 2183.
— — on Cucurbitaceae and melon, 2369b.
— — on *Mentha*, 3033.
— — on pea, see Pea.
— *umbelliferarum* on carrot, 493.
Escherichia coli, serological comparison of *E. nigrifluens* with, 1419.
Ethanol, effect of, on growth of *Armillaria mellea*, 2161a.
Ethoxy-ethyl mercuric chloride against *Oospora pustulans* on potato, 3629e.
Ethoxyquin against apple superficial scald, 1292, 1655.
—, inhibition of *Pezicula malicorticis* by, 1034.
— versus DPA, 1655.
Ethoxytrichloromethyl thiadiazol in combination as soil disinfectant, 1936.
Ethyl alcohol, see Ethanol.
— mercuric iodide in combination against *Rosellinia necatrix* on fruit trees, 11d.
— — phosphate as seed treatment for beet, 2592v.
— — — injury to beet seed, 2592v.
— — — in combination against *Rosellinia necatrix* on fruit trees, 11d.
— methane, effect of, on *Phytophthora infestans*, 1461.
— parathion against *Puccinia coronata* on *Lolium perenne*, 3118.
— — versus thiabendazol, 3118.
Ethylene, effect of, on enzyme activity and resistance of sweet potato to *Ceratocystis fimbriata*, 1084.
— -bis-dithiocarbamates against plant diseases, 1176d.
— oxide for sterilizing mushroom culture media, 2151.
Eucalyptus, *Alternaria tenuis* on, in Argentina, 3033.
—, *Calonectria crotalariae* on, 1159.
—, *Cylindrocladium floridanum* on, 2468.
—, — *scoparium* on, effect of C on growth of, 1341.
— damping-off in Argentina, 3033.
— *pilularis*, effect of nectrolide on, 2992.
— *regnans*, fungi in leaf litter of, 161.
Eucosma uereidopa associated with *Ascochyta tarda* on coffee, 1264.
Euparen against *Botrytis cinerea* on cyclamen, 3651; on grapes, 3625; *Plasmopara viticola*, 226; *Puccinia pelargonii-zonalis* on *Pelargonium*, 1620.
—, effect of, on *Botrytis cinerea*, 3651.
Euphorbia cyparaissias, *Uromyces* on, *Fusarium heterosporum* parasitizing, 1406.
— *hirta*, *Oidium heveae* on, host induced change in morphology of, 1093.
— *lactea*, *Glomerella cingulata* on, morphology and symptoms of, 347.
— *pulcherrima* virus in Denmark, 510d.
Euphrasia, *Coleosporium euphrasiae* on, in Hungary, 1115.
Eurotium halophilicum on glass, 3659.
Euscelis plebejus, overwintering of clover phyllody virus in, 1492h.
— — transmitting clover phyllody virus, 1492h, 1635, 3471; clover virus disease, 2255; *Gladiolus* virus, 1492i.
Eutettix tenella, see *Circulifer tenellus*.
Eutypa armeniacae on apricot, 2775.
Eutypella parasitica associated with *Acer saccharum* sunscald canker, 3634m.
— — on *A. saccharum*, 13h.

Exobasidium vaccinii on *Rhododendron*, 660.
— — on *Vaccinium angustifolium*, 2600e.
— *vexans* on tea, 3191.
Exosporium cinnamomi on cinnamon, 1062.
— *sultanae* on vine, 2586.

F461 against *Corticium solani* on potato, 2499; *Puccinia coronata* and *P. graminis* on oats, 2161f; *P. graminis* and *P. recondita* on wheat, 2682; *P. striiformis*, *Urocystis agropyri*, and *Ustilago striiformis* on *Poa pratensis*, *Ustilago striiformis* on *Agrostis palustris* and *Dactylis glomerata*, and as soil disinfectant, 28.
— versus D735, 28.
— S.T., see DCMOD.
Fabraea maculata on pear, 683, 2271.
Fagus, see Beech.
FC-43 as carrier for spores of *Erysiphe graminis* and *Puccinia graminis* in inoculation studies, 3042.
Fennel, see *Foeniculum vulgare*.
Fentin acetate against *Phytophthora infestans* on potato, 231i.
— — in combination against *Septoria apiicola* on celery, 2913.
— hydroxide against *Peronospora viciae* on pea, 2938c; *Phytophthora infestans* on potato, *Tilletia caries* + *T. foetida* on wheat, 3403.
— — injury to potato, 2800.
— —, toxicity of, to pea, 2938c.
Fentiurom against *Ascochyta rabiei* on *Cicer arietinum*, 2891.
— in combination against *Ascochyta fabae* on broad bean and *A. rabiei* on *Cicer arietinum*, 2891.
Ferbam against *Alternaria* on cotton, 2238; *Ascochyta tarda* on coffee, 1264; *Colletotrichum capsici* f.sp. *cyamopsicola* on *Cyamopsis psoraloides*, 3605; *Plasmopara viticola*, 2588.
—, effect of, on pollen germination and fruit yield of cranberry, 1669.
— in combination against *Corticium solani* on *Hevea* rubber, 2306; *Glomerella cingulata* on *Vaccinium corymbosum*, 2477; *Plasmopara viticola*, *Sclerotinia fuckeliana*, and *Uncinula necator* on vine, 2155.
Fermate against *Curvularia inaequalis* on maize, 2003; *Glomerella cingulata* on mango, 394.
Fernasan, effect of, on germination of barley seed and on viability of wheat seed, 3066.
Fertilizers, effect of, on alkaloid production of *Claviceps microcephala* strs., 1214a; *Ascochyta pisi*, on pea, 187; *Cephaleuros parasiticus* on tea, 1722; *Cercospora beticola* on beet, 1781; *Cercosporella herpotrichoides* on wheat, 1255; corky root of lettuce, 500; *Corticium solani* on tomato, 436a; *Corynebacterium sepedonicum*, 1180c; *Erwinia atroseptica* on potato, 150; *Erysiphe polygoni* on pea, 187; *Fusarium oxysporum* on pea, 187; *F. oxysporum* f.sp. *gladioli* on *Gladiolus*, 2245; *F. oxysporum* f.sp. *vasinfectum* and *F. solani* on cotton, 626; *Griphosphaeria nivalis* on cereals, 1513a; *Leptosphaeria maculans* on cabbage, 467; *L. salvinii* on rice, 1574; *Macrophomina phaseoli* on jute, 640; *Ophiobolus graminis* on wheat, 296, 1255; *Phoma herbarum* var. *medicaginis* on lucerne, 3474; *Plasmodiophora brassicae* on cabbage, 573b; potato virus diseases, 1684; *Rhizoctonia aderholdii* on cabbage, 573b; root rot of lucerne, 365; *Sclerotinia bor* on cereals, 1513a; *Ustilago maydis* on m 980; *Ustilago nuda* on barley, 1985; *Ver lium alboatrum* on hop, 2293.
Ferulic acid, effect of, on resistance of ri *Pyricularia oryzae*, 608.
Festuca, *Corticium fuciforme* on, in U 2052.
—, (?)maize dwarf mosaic virus on, in U 2006.
—, *Pseudomonas coronafaciens* on, in th Republic, causing chocolate spot, 508c.
*— *arundinacea*, *Ustilago bullata* on, i S. Wales, 2942.
— *rubra*, *Corticium fuciforme* on, fa affecting, 1630.
Fibreboard, *Sporotrichum pruinosum* or
Ficus carica, see Fig.
— *elastica* and *F. pandurata*, *Gloeosp elastica* on, in Hungary, mode of ent 1610.
Fig (*Ficus carica*), *Cerotelium fici* on, in 3151.
— mosaic virus on mulberry, 756.
(?)*Fistulina hepatica* on timber, 2543.
Fl 23 and Fl 29, effect of, on fungi o bulbs, 1624.
Flavensomycin, mechanism of action o *Penicillium oxalicum*, 3333.
Flax (*Linum usitatissimum*), aster yellows on, 1953.
—, *Bacillus macerans* on, in U.S.S.R., 2
—, *Botrytis cinerea* on, in Germany, control, 638; factors affecting, 637; met of detecting in seed, lc; var. react. to,
—, *Corticium solani* on, behaviour of s basidiospore isolates and heterokaryo 1480; genetics of, 1597.
— diseases, trials of resistant vars. in Arge 1954.
—, *Fusarium oxysporum* in rhizosphere of, react. to, 2034.
—, — — on, in Canada, var. react. 1180e.
—, — — f.sp. *lini* in rhizosphere of, var. r to, 2034.
—, — — — — on, effect of bacteria rhizosphere and non-rhizosphere soil 1843e; immunological relationships be plant globulins and, 2612.
—, — — ff.sp. on, cross-protection in, 22
—, *Melampsora lini* on, in Portugal, ph logic races of, 130; preservation of u spores of, 2239.
—, *Phoma* in rhizosphere of, var. react 2034.
*—, *Sclerotium rolfsii* on, in India, 2669.
— yellow disease virus, differentiatio turnip mild yellows virus from, 2592i.
Flies, *Entomophthora vomitoriae* on, in Eu renamed *Zoophthora vomitoriae*, 1427.
—, *Zoophthora vomitoriae* on, in Eu previously named *Entomophthora toriae*, 1427.
Flintkote as wound dressing, 672.
Flit 406, effect of, on germination of b seed and viability of wheat seed, 3066.
Flour, fungi in, 535.
Fluoride, effect of, on tobacco mosaic viru bean, 913, 3271.
— in combination as timber preserva 2865c.
Fluorine, accumulation of, by plants, 36.

dder grasses, *Claviceps paspali, C. purpurea, Cymadothea trifolii,* and *Diplodia maydis* on, effect of, on domestic animals, 1022.
—, diseases of, in U.S.S.R., morphology and symptoms of, 574.
—, *Fusarium roseum* on, effect of, on domestic animals, review of, 1022.
—, *Gibberella zeae* on, causing toxicity in farm animals, study on, 2991.
eniculum vulgare, Alternaria umbellifericola on, 1305.
—, *Ramularia foeniculi* on, in Argentina, 3033.
lpet in combination against *Podosphaera leucotricha,* 374.
— —, effect of, on grape juice fermentation, 505.
mes annosus, asexual nuclear behaviour of, 1924.
—, biological effects and characteristics of toxin produced by, 2862.
—, formation of fruiting body by, in culture, 164.
— in soil, 13g.
—, motility of nuclei of, 3362.
— on *Abies,* 453, 766.
— on *Araucaria cunninghamii* and (?)*Agathis australis,* 1349.
— on Coniferae, 452.
— on forest trees, 1107.
— on pine, see Pine.
— on *Pseudotsuga menziesii,* 1129.
— on sawdust, 2334.
— on spruce, see Spruce.
— on trees, 749.
— on *Tsuga heterophylla,* 1129.
—, spore dispersal of, 2118.
—, technique for preparing antigens from, 904.
— f.sp. *multistrata* on spruce, 1132.
— *cinchonensis* on timber, 775.
— *fomentarius* on aspen, 762, 3214.
— on beech, 751.
— on birch, 3214.
— on timber, 2853.
— *geotropus* on timber, 2616.
— *hartigii* on *Abies,* 453.
— *igniarius* on aspen, 760, 761, 762.
— on beech, 751.
— on birch and deciduous trees, 2527.
— on vine, 2586.
— f.sp. *betulae* on aspen and birch, 3214.
— *lignosus* on *Hevea* rubber, see Rubber.
— *lividus* on timber, 2125.
— *marginatus,* method of cultivating, 567.
— *nigrolimitatus* on spruce, 2847c, 3238.
— *noxius* on *Hevea* rubber, (?)1088, 1089b, 1705.
— on timber, 775.
— *officinalis* on larch, 2527.
— on timber, 775.
— *pini* associated with *Periderium stalactiforme* on pine, 2856.
— on pine, 1762.
— on spruce, 2847c, 3238.
— on timber, 2549.
— var. *abietis* f. *laricis* on larch, 2527.
— *pinicola* on aspen, 762.
— on beech, 751.
— on spruce, 2847c.
*— *rhabarbarinus* on timber, 775.
— *rimosus,* annual and diurnal patterns of basidiospore release by, 131.
*[*Fomes*] *rudis* on timber, 775.
— *tremulae* on aspen, 2527, 3214.
— on birch, 3214.
— on timber, 2853.
Fomitopsis insularis, production of toxic metabolite by, 2862.
Forest trees, diseases of, in Africa and Madagascar, 2b; Norway, 3211; U.S.S.R., 441; the world, review of, 3210; necessity for research on, 2109.
—, virus diseases of, in Europe, 442.
Formaldehyde against *Ctenomyces* and soil micro-organisms on woollen materials, 3658; *Erwinia atroseptica* on potato, 1682; *E. carotovora* and *Gloeosporium achaeniicola* on coriander, 2486; as soil disinfectant, 3225a.
—, effect of, on tobacco mosaic virus, 911.
— in combination against damping-off of pine, 3225a; as seed treatment for pine, 456.
Formol as soil disinfectant, 2037.
Forsythia, Arabis mosaic virus str. on, transmission of, to *Sambucus nigra,* 77.
*— leaf net virus on *F. intermedia* in *Poland, 1511.
**—intermedia* fasciation in Poland, 1511.
—, *Phoma forsythiae* and *Pseudomonas savastanoi* on, in Poland, symptoms of, 1611.
Fragaria, see also Strawberry.
—*chiloensis, Phytophthora fragariae* on, physiologic races of, 2075.
— and *F. ovalis, Sphaerotheca macularis* on, study on conidia of, 145.
Fraxinus, see Ash.
Frost injury, difference between symptoms of *Scleroderris lagerbergii* and, 460.
— in relation to *Botrytis cinerea* on coniferae, 440.
Fruit trees, diseases of, in Chile, 1945a; Pacific Basin, 236f; control, 235l; difference in, between E. and W. coast, 236f.
—, fungi on, control, 673c.
—, gummosis of, review of, 674.
—, *Rosellinia necatrix* on, control, 11d.
—, *Stereum purpureum* on, revised leaflet Min. Agric. & Fish. on, 3482.
—, *Verticillium* on, in U.S.S.R., 3695b.
— virus diseases in Bulgaria, 1643; France, 234; Germany, 1642; Scandinavia, 568; comparison of purifying methods, 1492q; control, 1642, 1643; incidence of, 1643; legislation against in Canada, 1886; symptoms and transmission of, 1643.
Fuchsia, Alternaria tenuis, Aureobasidium pullulans, Botrytis cinerea, and *Penicillium* on, effect of age on penetration by, 3460a.
—, *Phytophthora cactorum* and *Pythium debaryanum* on, stigma-style infection route of, 3460a.
Fuclasin against *Ascochyta cucumis* on cucumber, 573h; *Scolecotrichum melophthorum* on cucumber, 573e.
Fuel, aircraft, *Cladosporium resinae* and micro-organisms in, 3337a, b, c.
Fungi, advanced treatise on, vol. II, 238.
—, biochemistry of lignin degradation by, 2165.
—, biology of wood-destroying, German edition of book on, 779.
—, catalogue of culture collection of, in France, 1472.
—, comparative ultrastructure of developing asci and sporangia in, 1231g.
—, comparison between cellulolytic activity of white and brown rot, 43.

[Fungi], ecology of, book on, 3319.
—, effect of Ca cyanamide on, 2371; of high O pressures on, 248; of rare earth elements and yttrium on growth of, 3346; of temp. on survival of, 1442; of warming on viability of frozen spores of, 2390.
—, extrachromosomal heredity in, 1842c.
—, hyperparasitism among, 1406.
— in jet fuel, 3337a.
—, international dispersal of, in Europe, 2355c.
—, kinetics of growth of, 1903, 2953.
—, list of, in Brazil, 2630; Estonia, 1474; Guinea, 894; India, 1222, 1477; Lithuanian Republic, 1221; New Caledonia, 3354; Pakistan, 1913; Poland, 1916, 3006; Rumania, 1479.
—, nutritional interactions between plants and, 1843a.
— on forest trees, 2b.
—, obligate parasitism in, 3636.
—, parasitism of by other organisms, lecture on, 2382.
—, production of antibiotics by, 863.
—, studies on binding and release of toxicants by conidia of, 543.
—, Cantharelloid, monograph on, 269.
—, edible, in U.S.S.R., description of, 1475.
— entomogenous, mass culturing of, 1425.
— imperfecti in Hungary, 555a; U.S.S.R., 63, 918; formation of pathogenic races of, 918.
— — on timber, 3243.
— —, theoretical bases for classification of, 1917.
—, nematode-trapping, carbohydrate nutrition of, 2182.
—, plant pathogenic, technique for culturing, 2647; preserving, 2646.
Fungicides, effect of, on appearance of stone fruit, 376; on *Phymatotrichum omnivorum* on cotton, 1591; on properties of organophosphate insecticides, 2607; on spore dissemination of *Peronospora tabacina* on tobacco, 2105b.
—, official F.D.A. tolerances, annual revision of, 2961.
—, recent research on, 1429.
—, residues of, in crops, 526.
—, review of industrial, 1880; of systemic, 2372.
—, selectivity of, 1434.
—, synergism in, 516p.
—, systemic, assimilation of in plants, 3650.
—, paint, mode of action and relation of chemical structure to activity of, 34.
Fungifos against *Fusarium* on *Cicer arietinum*, 2891.
Fungitox P as seed treatment for wheat, 2689.
Fungus spores, symposium on, 1407.
Fungus world, The Romance of, reprint of book on, 15.
Fusarial as seed treatment for barley, 1987.
—, effect of, on viability of wheat seed, 3066.
— neu as seed treatment for barley, 3072.
Fusarium acuminatum, effect of, on growth of tomato, 2106.
— — on *Bromus inermis*, 663.
— — on maize, 985.
— *avenaceum*, associated with *Calonectria nivalis* on rye, 3080.
— — inhibiting seed germination, 1857.
— — on avocado pear, 2289.
— — on oats, 2160c.
— — on *Onobrychis viciaefolia*, 1641.
— — on pine, 456.
[*Fusarium avenaceum*] on wheat, 589, 1539, 3
— *bulbigenum* in soil, 2002.
— *caeruleum* on potato, 2806, 3181, 3629b.
— *culmorum*, associated with *Calonec*
nivalis on rye, 3080.
— —, C metabolism and swelling of conidia
3673.
— —, effect of Na propionate on sporula
of, 1451.
— —, electron microscopic study of, 122
— —, growth of, with *Pythium oligandrum*
cellulose film, 59.
— — in soil, 2002.
— —, inhibition of, by garlic root extracts.
— —, isolation of, 1227a.
— — on *Asparagus*, 2369j.
— — on maize, 984.
— — on tomato, 61a, c.
— — on wheat, 1513b, 1539, 3404.
— —, preparation of spore coats of, 1920
— —, spore germination and wall structure
874.
— —, stimulation of growth of *Pyth*
debaryanum and *P. ultimum* by, 59.
— —, study on protoplasts of, 515,
2602.
— *dimerum* in soil, 56.
— — on *Vicia faba* var. *equina*, 3282.
— *equiseti* on avocado pear, 2289.
— — ssp. *ossicolum* in soil, 2002.
— *gibbosum* on wheat, 1513b.
— *heterosporum* parasitizing *Uromyces*
Euphorbia cyparaissias, 1406.
— *lateritium* on rice, 3416b.
— *martii* var. *pisi* on pea, 1379.
— *moniliforme* var. *lactis* on *Bromus inerm*
663.
— — var. *minus* on avocado pear, 2289.
— *nivale*, see *Calonectria nivalis*.
— — var. *majus* on *Bromus inermis*, 663.
— *orthoceras*, enzyme production by, 1853.
— *oxysporum*, asexual nuclear behaviour
1924.
— —, effect of fungicides on growth of, 29
of polyram combi on, 3651; of Na trichlo
phenate on, 25; of tetrachlorethyl
fungicides on, 2606; of zineb on, 3651.
— —, growth of *Pythium oligandrum* with,
cellulose film, 59.
— — in rhizosphere of clover, 361; of fl
2034.
— — in soil, 259, 1909, 2002.
— — on *Asparagus*, 2369j.
— — on avocado pear, 2289.
— — on bean, 2187.
— — on broad bean, see Bean, broad.
— — on cabbage, 3254.
— — on *Chrysanthemum*, 1017.
— — on clover, 361.
— — on cucumber, 1513v.
— — on flax, 1180e.
— — on *Gladiolus* and hyacinth, 1602.
— — on lentil, 1513i.
— — on *Lotus corniculatus* roots, 3124.
— — on lucerne, 2768.
— — on lupin roots, 2852.
— — on maize seed, 3416a.
— — on melon, 1513v, 1821, 2579.
— — on *Narcissus*, 1602.
— — on oil palm, 3389.
— — on onion, 207, 2909.
— — on pea, 187.
— — on pine roots, 1353a, 2852.

usarium oxysporum] on potato, 2094.
— — on rice, 259, 3416b.
— — on soybean, 1513i.
— — on strawberry, 384.
— — on tulip bulbs, 1602, 1624.
— — on *Vicia faba* var. *equina*, 3282.
— — on watermelon, 1513v, 2579.
— — on *Zoysia japonica*, 1286.
— —, production of volatile inhibitors of spore germination by, 1210.
— —, toxicity of aromatic and heterocyclic derivatives to, 1871b; of coke chemicals to, 532.
— — ff.sp., cross-protection induced by, 2210.
— — f.sp. *batatas* on bean, 2187.
— — — — on sweet potato, 1085, 1086.
— — — *callistephi*, effect of UV light on, 1481b.
— — — —, effect of, on *F. o.* f.sp. *lycopersici* on tomato, 2830.
— — — —, heterokaryosis and the parasexual cycle in, 1481a; isolation of auxotrophic mutants of, 1481b.
— — — — on aster, 1012, 1606.
— — — *cepae* on onion, 1808, 1809.
— — — *conglutinans* on cabbage, 3387.
— — — — on radish, 1775, 3258.
— — — *cubense*, not related serologically to *Sclerotium rolfsii*, relationship of to *F. o.* f.sp. *vasinfectum*, 3358.
— — — *cubense* on banana, see Banana.
— — — — on bean, 2187.
— — — *cucumerinum* on cucumber, 842a.
— — — *cumini* on cumin, 1306.
— — — *dianthi*, effect of, on *Fusarium oxysporum* f.sp. *lycopersici* on tomato, 2830.
— — — *elaeidis* on oil palm, 1065, 3389.
— — — *fragariae*, proposed as name for *F. oxysporum* on strawberry, 384.
— — — *gladioli* on *Gladiolus*, see *Gladiolus*.
— — — *lini* in rhizosphere of flax, 2034.
— — — — on *Bromus inermis*, 663.
— — — — on flax, 1843e, 2612.
— — — — on linseed, 3157.
— — — *lupini* on lupin, 3478.
— — — *lycopersici* in soil, 3684.
— — — —, toxicity of dithiocarbamates to, 1874.
— — — *melonis* on melon, see Melon.
— — — —, production of lycomarasmin by, 541.
— — — *narcissi* on *Narcissus*, 3466.
— — — *nicotianae* on tobacco, 2312a, b.
— — — *niveum* on bean, 2187.
— — — — on cucurbits, 2923.
— — — — on watermelon, 81.
— — — *perniciosum* on *Albizia julibrissin*, 1748.
— — — —, xylem sap as medium for, 443.
— — — *phaseoli* on bean, 2187.
— — — *pisi* in soil, 1218.
— — — — on broad bean, (?)1846.
— — — — on pea, see Pea.
— — — *redolens* on oats, 2160c.
— — — *tuberosi* on potato, 402a.
— — — *udum* in soil, 3683.
— — — *vasinfectum*, antagonism of *Pythium* to, 60.
— — — —, heavy metal chelates of toxin produced by, 1587.
— — — — in soil, 3683.
— — — —, inhibition of *Bacillus subtilis* by antibiotics from, 1586.
— — — —, interaction of, with *Aspergillus terreus* and *Cunninghamella echinulatus*, 336.
[*Fusarium oxysporum* f.sp. *vasinfectum*], metabolism of tryptophan by, 1586.
— — — — not related serologically to *Sclerotium rolfsii*, 3358.
— — — — on bean, 2187.
— — — — on cotton, 1513k, 2159c.
— — — —, production of pigment by, 1584.
— — — —, relationship of to *F. o.* f.sp. *cubense*, 3358.
— *poae* on maize, 984.
— — on wheat, 3404.
— *redolens* on tulip, 1282.
— *roseum* in rhizosphere of clover, 361.
— — on banana, 1053.
— — on cacao, 1519g.
— — on clover, 508c.
— — on fodder grasses, 1022.
— — on *Lotus corniculatus* roots, 3124.
— — on maize, 12q.
— — on *Poa pratensis*, 1023, 1630.
*— — on tomato, 434.
— — on turf, 1023.
— — on wheat, 3063.
— — on *Zoysia japonica*, 1286.
— — f.sp. *cerealis* on sorghum, 2007.
— — — — on tomato, 1517.
— — — — ' Avenaceum ', *Gibberella avenacea* perfect state of, 3405.
— — ' Gibbosum ' on banana, 2482.
— *sambucinum* on maize, 2706.
— — on tomato, 61a.
— — on *Vicia faba* var. *equina*, 3282.
— — var. *minus* on *Bromus inermis*, 663.
— *semitectum* on avocado pear, 2289.
— — on melon, 1821.
— — on pine, 456.
— *solani*, (?)causing canker of *Acer saccharum*, 444.
— —, effect of high O pressure on, 248; of Na orthophenyl phenate on development of, 1195.
— — in soil, 1000, 1362.
— — on avocado pear, 2289.
— — on banana, 1053.
— — on broad bean, 3282.
— — on *Bromus inermis*, 663.
*— — on *Broussonetia papyrifera*, 3218.
— — on citrus, 1001.
— — on clover, 361.
— — on cotton, 335, 626, 1269.
— — on cucumber, 842a.
— — on eggplant, 1169.
— — on elm root cuttings, 3578.
— — on lemon, 1000.
— — on lime, 1452.
— — on *Lotus corniculatus* roots, 3124.
— — on lupin roots, 2852.
— — on *Maesopsis eminii*, 1745b.
— — on melon, 1821.
*— — on mulberry, 3218.
— — on orange, 2723.
— — on pine, 456, 1353a, 2852.
— — on rice, 3416b.
— — on *Vicia faba* var. *equina*, 3282.
— — on *Zoysia japonica*, 1286.
— —, resistance of, to compounds with benzene, diphenyl, or naphthalene nucleus, 2369g.
— —, taxonomic significance of proteins and catalase isoenzymes from, 2637.
— — f.sp. *cucurbitae*, effect of light on sexual reproduction in, 3674.
— — — — on bean, 2187.

[*Fusarium solani* f.sp. *cucurbitae*] on cucumber, 2348.
— — — — — on *Cucurbita ficifolia*, 2146.
*— — — — — on squash, 2577.
— — — *ginseng* on ginseng in Korea, 236g.
— — — *phaseoli* in soil, 190.
— — — — — on bean, see Bean.
— — — *pisi* in soil, 1218.
— — — — — on pea, 2132, 2881.
— — — — —, taxonomic significance of proteins and catalase isoenzymes from, 2637.
— — + *Tylenchulus semipenetrans* in soil, 1000.
— *stilboides* on coffee, 1266.
— *udum*, effect of *Streptomyces griseus* on, 1853.
— —, inhibition of by pigeon pea mosaic virus, 488.
— — on pigeon pea, 1383.
Fusicladium effusum on pecan, 1752, 2114.
Fusicoccum amygdali on peach, 378.
— *elaeagni* on *Elaeagnus angustifolia*, 3113.
— *putrefaciens* on *Vaccinium corymbosum*, 2476.
Fylomac 90, inhibition of *Curvularia eragrostidis*, *Ganoderma zonatum*, and *Marasmius palmivorus* by, 3536.
Fytostrep against *Pelargonium* wilt, 1281.

Gaillardia aristata, *Entyloma compositarum* on, 3463.
Gamma radiation, effect of, on storage of orange, 1004; on viability of *Synchytrium endobioticum* on potato, 2807.
— —, sugarcane mutant resistance to *Glomerella tucumanensis* induced by, 1715.
— — in combination, effect of, on fungi on citrus, 3440.
Ganoderma applanatum, impaction patterns of spores of, 3639.
— — on aspen, 762.
— *lucidum* on *Albizia julibrissin*, ash, *Liquidambar styraciflua*, oak, and *Platanus occidentalis*, 1108.
— *pseudoferreum* on *Hevea* rubber, 1089a, 1705, 1706.
*— — on tea, 2358d.
— *zonatum* on oil palm, 3536.
Gardenia, *Phomopsis gardeniae* on, incidence and symptoms of, 2745.
Garlic (*Allium sativum*), antibiotic effect of root extracts of, on root surface fungi, 810.
—, *Puccinia asparagi* on, immunity to, 3294.
—, *Sclerotium cepivorum* on, control, 3293.
Genetic polymorphism in parasitic systems, 845.
Geotrichum candidum on *Capsicum*, 876.
— — on lemon and man, 877.
— — on orange, 876, 877.
— — on tomato, 1332.
— — on watermelon, 876.
— — var. *citri-aurantii* on citrus, 3440.
**Geranium*, *Coniella diplodiella* on, in India, morphology and symptoms of, 1612.
Germisan against *Botrytis cinerea* on grapes, 837; *Cryptodiaporthe populea* on poplar, 2841.
Geum macrophyllum, *Phytophthora fragariae* on, resistance to, 3390.
Gibberella avenacea on wheat, 3405.
— *cyanea* on *Bromus inermis*, 663.
— *fujikuroi*, effect of plant growth regulators on strains of, 1896.
— —, gibberellin production by, 564, 2617.
— — in soil, 1908.
— — on avocado pear, 2289.
— — on banana, 2482.
[*Gibberella fujikuroi*] on cotton, 625, 203 2736.
— — on *Lotus corniculatus* roots, 3124.
— — on maize, see Maize.
— — on mango, 2786.
— — on potato, 2095.
— — on rice, 1576, 3092.
— — on sorghum, 2007.
— — on sugarcane, 513, 3188c.
— —, potato spindle sprouting induced filtrates of, 1690.
— — var. *subglutinans* on maize, 1565.
— — — — — on pineapple, 2787.
— *pulicaris* on avocado pear, 2289.
— *zeae*, associated with *Calonectria nivalis* rye, 3080.
— —, inhibiting seed germination, 1857.
— — on cereals, 11g.
— — on clover, 2763.
— — on fodders, 2991.
— — on maize, see Maize.
— — on potato, 3549.
— — on wheat, see Wheat.
Gibberellic acid against *Cercospora coffeicola* coffee, 2023b; *Ustilago avenae* on oats, 1
— —, effect of, on *Verticillium alboatrum* tomato, 3570.
— —, inhibition of tuber formation in healt and infected potato stems by, 1070.
— —, potato spindle sprouting induced b 1690.
Gilbertella persicaria on peach, 1471.
— —, use of silver nitrate for staining spor giospores of, 3368.
— — var. *indica* on peach, 1471.
Ginseng (*Panax quinquefolius*), *Fusarium solan* f.sp. *ginseng* on in Korea, 236g.
GIPKH-34 against fungi on packing materi 1370.
— versus N-cetylpyridine dichloride, 1370.
Gladiolus, *Alternaria* on, control, 1602.
—, aster yellows and bean yellow mosaic virus on, in France, symptoms of, 2039b.
—, *Botrytis* on, control, 1602.
— corm rot control, 651.
—, cucumber mosaic virus and *Curvular trifolii* f.sp. *gladioli* on, in France, sympto of, 2039a,b.
—, *Fusarium oxysporum* on, control, 1602.
—, — — f.sp. *gladioli* on, in Czechoslovaki 348; U.A.R., 2245; effect of I on, 34 factors affecting, 2245.
— leaf tipburn, relationship of to hydrog fluoride content of air and F content leaves, 2040.
—, *Pleospora herbarum* on, in Czechoslovaki 2746.
—, *Sclerotinia gladioli* on, biology and symp toms of, 1613.
—, tobacco rattle virus on, 285.
—, — — — — strs. on, causing notched lea transmission of, by vectors, 2442.
—, *Urocystis gladiolicola* on, infection cycle, o 2038.
— virus disease in France, similarity of symp toms of to western aster yellows viru transmission of by vectors, 1492i.
— virus diseases in France, symptoms o 2039b.
Glass, *Eurotium halophilicum* on, facto affecting spore germination of, 3659.
Gliocladium catenulatum, effect of, on growt of tomato, 2106.

*Glioclad*ium] *roseum*, antagonism of, to *Armillaria mellea* on pine, 2120; *Verticillium alboatrum* on lucerne, 1180e, 2055.
— — in rhizosphere of *Acer platanoides*, 2623; of Leguminosae, 1180e.
— —, inhibition of by garlic, leek, and onion root extracts, 810.
— — on coconut, 709.
— — on soybean, 3601.
— — on spruce, 2108a.
Gliomastix murorum var. *felina*, antagonism of to *Ophiobolus graminis* in rhizosphere of wheat, 3061.
**Gloeocercospora sorghi* on maize, 3632b.
Gloeodes pomigena on apple, 1033.
Gloeosporium achaeniicola on coriander, 2486.
— *alborubrum* on *Hevea* rubber, 1090b, 3185.
— *apocryptum* on *Acer*, 158a.
— *elastica* on *Ficus elastica* and *F. pandurata*, 1610.
— (?)*foliicolum* on orange, 2945h.
— *opuntiae* on cactus, 2037.
— *psidii*, utilization of polysaccharides by, 1211.
Gloeotinia temulenta on *Lolium*, 1285, 3312.
— — on *L. perenne*, 2253.
Glomerella cingulata, alkaloids as self-inhibitors of, 2383.
— — against *Arceuthobium campylopodum* f. *campylopodum* on pine, 2164.
— —, bimodality of dosage response of, to thiram, 2175.
— —, designated *Colletotrichum gloeosporioides* var. *minor*, new var. of, causing fruit rots, 370.
— —, heterokaryosis in, 562.
— — in Estonia, 556.
— — on *Anacardium occidentale*, 3519.
— — on apple, see Apple.
— — on avocado pear, 391.
— — on cacao, 1519e.
— — on cassava, 1833, 1941.
— — on citrus, see Citrus.
— — on coffee, see Coffee.
— — on *Dalbergia sissoo*, 82.
*— — on eggplant, 3384.
— — on *Euphorbia lactea*, 347.
— — on *Hevea* rubber, 1088.
— — on ivy, 2247.
*— — on *Magnolia grandiflora*, 2248.
— — on mango, 394, 3518.
*— — on *Mussaenda frondosa*, 1617.
— — on pear, 3497.
*— — on *Saraca indica*, 1347.
— — on *Vaccinium corymbosum*, 2477.
— —, utilization of oligosaccharides by, 251; polysaccharides by, 1211.
— — var. *orbiculare* on cucumber and watermelon, 824.
— *gossypii*, asexual nuclear behaviour of, 1924.
— — on cotton, 2032, 2433, 3389.
— *tucumanensis* in soil, 3683.
— — on sugarcane, see Sugarcane.
— —, stimulation of conidial germination in, 730.
*Gloxinia (*Sinningia speciosa*), *Thielaviopsis basicola* on, in U.S.A., 652.
Glycerine, use of, on cherry, 1045.
Glycine javanica, (?)*Pseudomonas phaseolicola* on, in New S. Wales, *2357b, 2942.
— *max*, see Soybean.
— *wightii*, *Ascochyta phaseolorum* on, in Queensland, symptoms of, 3276.
Glycyrrhiza echinata, *Cercospora* on, in India, imported from U.S.S.R., 702.
Glyodex against *Venturia inaequalis*, 1180b.
Glyodin-dodine against *Blumeriella jaapii* on cherry, toxicity of, to cherry, 2771.
— in combination against *Venturia inaequalis*, 1289.
Glyoxylic acid thiosemicarbazone, uptake and metabolism of by roots of bean and wheat, 3331.
Gnomonia fructicola on strawberry, 3512, 3513.
— *geranii*, associated with dieback of *Pelargonium capitatum*, relationship of to *Lasiodiplodia frezaliana*, 1678.
— *leptostyla* on walnut, 1337.
Gomphrena virus, cytopathology and ultra structure of, 1231f.
— *globosa* as indicator for potato viruses, 1685.
— —, beet mild yellowing virus on, 181.
— —, *Colletotrichum gloeosporioides* var. *gomphrenae* on, 136.
— —, *Cymbidium* mosaic virus on, 2206.
— —, potato virus can infect, 1073.
— —, — — X on, effect of high light intensities on, 2205; inhibitors from leaves of, on, 146.
— —, — — Y str. C not infecting, 408.
— —, red clover mottle virus can infect, 141.
— —, tobacco mosaic virus on, effect of high light intensities on, 2205.
— —, — — — orchid str. on, 2206.
— —, — — — str. pp on, 3540.
— — virus on *G. globosa* in Brazil, (?)related to lettuce necrotic yellows virus in Australia, 283.
Goodyera repens, *Rhizoctonia goodyerae-repentis* on, identified as *Ceratobasidium cornigerum*, 10e.
Gooseberry (*Ribes grossularia*), *Pseudopeziza ribis* on, host-parasite relationship of, 3143.
*—, *Septoria grossulariae* on, in U.S.S.R., symptoms of, 1663.
—, *Sphaerotheca mors-uvae* on, in U.S.S.R., 697, 2283; control, 697, 3335; factors affecting, 2283; overwintering of, 697.
— veinbanding virus on currant, 2282.
Gossypium, see Cotton.
Gossypol, formation of, in cotton infected by *Rhizopus stolonifer* and *Verticillium alboatrum*, 3449.
Grallomyces portoricensis, redescription of, 1228b.
Gramineae (see also Grasses), *Anthoxanthum* mosaic virus can infect, 3310d.
—, *Corticium solani* can infect, 1573.
—, fungi in rhizosphere of, in U.S.S.R., 2998.
—, *Helminthosporium* on, taxonomy of, 1922.
—, maize dwarf mosaic virus on, 975b.
—, *Septoria* on, in Estonian S.S.R., 1849i.
—, virus diseases of, in U.S.S.R., 92z; mechanical transmission of, 1496.
Graminella nigrifrons transmitting maize stunt virus, 600.
Granosan against *Ascochyta pisi*, 477; *Fusarium* on rye, 973; *Tilletia caries*, 934, 2688; as seed treatment for barley, 961, 2697; broad bean, 1801; cotton, 127; larch, 2327b; maize, 605; pea, 187, 3269; pine, 2327a; plants, 2606; sorghum, 313; soybean, 3601; *Thuja plicata*, 2327b; tomato, 1737; wheat, 1513b, 2416; as soil disinfectant, 2737.
— versus thiram, 973.
— in combination against *Tilletia caries*, 2688; as seed treatment for beet and wheat, 578.

*Grapefruit (*Citrus paradisi*), (?)*Ascochyta* on, in U.S.A., 2945h.
— *Cercospora gigantea* on in U.S.A., 2945h.
—, *Diplodia* on, 3498.
— ' impietratura ' in Cyprus, non-transmission of, by budding to lemon, 2944a.
Grapes, see Vine.
Graphiola phoenicis on date palm, 1404d.
Graphium state of *Ophiostoma roboris*, 752.
Grass-sorghum hybrids, *Sclerospora sorghi* on, in U.S.A., 2947a.
Grasses (see also Gramineae and Turf) as source of infection for *Claviceps purpurea* on rye, 1515.
—, *Aspergillus* in rhizosphere of, in U.S.S.R., 61a.
—, barley yellow dwarf virus on, in Canada, transmission of, by vectors, 3395.
—, *Bromus* mosaic virus on, in S. Africa, 288.
—, *Calonectria nivalis* on, 3630d.
—, *Cercosporella herpotrichoides* on, in Irish Republic, as source of infection of barley and wheat, 508b.
—, *Claviceps* on, in China, 1214b.
—, — *purpurea* on, leaflet on, 3075.
—, *Cochliobolus sativus* on, in Philippines, 2693.
—, — *victoriae* on, geographical distribution of, 1554.
—, *Erysiphe graminis* on, in U.S.S.R., 1513e.
—, fungi on, in India, 2184a, b.
—, *Helminthosporium pedicellatum* on, in U.S.A., 2000.
—, iron deficiency and lime-induced chlorosis in, effect of, on root systems of, 2629.
—, maize dwarf mosaic virus on, in U.S.A., 2756.
—, — mosaic virus on, in Yugoslavia, 599.
*—, *Phoma herbarum* var. *medicaginis* on, in Irish Republic, 508c.
*—, *Podosporiella verticillata* on, in New S. Wales, 1944.
—, *Puccinia graminis* on, in Greece, overwintering of, 1531.
—, *Pyrenophora semeniperda* on, 925.
—, *Terfezia leonis* on, forming mycorrhiza in U.S.S.R., 3661.
—, *Typhula incarnata* on, in Germany, 92.
—, *Xanthomonas axonopodis* on, transmission of, 666.
Greengage (*Prunus domestica* var. *italica*), *Sclerotinia laxa* on, penetration by, 2457c.
Griphosphaeria nivalis on cereals, see Cereals.
— — on rye, 973.
— — on turf, 1631.
— — on wheat, see Wheat.
— — on *Zoysia japonica*, 1286.
— —, see also *Calonectria nivalis*.
Griselinia littoralis, mycorrhiza of, importance of, in P uptake, 2380.
Griseofulvin against *Microsphaera lonicerae* on *Lonicera tartarica*, 3335; *Sclerotinia* on apple, 2460; *Sphaerotheca mors-uvae* on gooseberry, 3335.
—, assimilation of, in plants, 3650.
—, effect of, on *Botrytis*, 256; *B. cinerea* on *Pteridium aquilinum*, 2176; *Cochliobolus miyabeanus*, 1436; phytopathogenic fungi, 865; *Pythium debaryanum* on *Pteridium aquilinum*, 2176; saprophytic fungi, 865; *Verticillium alboatrum* and *V. dahliae*, 1876.
Grizemin as seed treatment for bean, 192.
Groundnut (*Arachis hypogaea*), *Aspergillus* o in India, 1805; U.S.A., effect of soil trea ments on, 2902.
—, — *flavus* on, 204; in C. Africa, 1387c; Israe 3608; effect of CO_2 on, 3288; of gas conc and temp. on, 2141; incidence of, 1387 production of aflatoxin by, 1455, 3288.
—, — *niger* on, 204; in *India, 1806; Isra 3608; control, 2571.
—, — *parasiticus* on, production of aflatoxin b 1455.
—, — *pulverulentus* on, in *India, 1806; contr 2571.
— breakdown, fungi associated with, 3287.
— bunchy top virus on *Alysicarpus longifol* and *Desmodium diffusum*, 1388.
— — — — on groundnut, symptoms and trans mission of, by grafting and seed, 1388.
—, *Calonectria* on, 1386f.
—, — *crotalariae* on, perfect state of *Cylind cladium crotalariae*, 1159.
—, *Chaetomium* on, in India, 1805.
— chlorosis virus on *Alysicarpus longifolius* a *Desmodium diffusum*, 1388.
— — — on groundnut, separation of, fr bunchy top complex, transmission of, b sap, seed, and vectors, 1388.
— collar rot, control, 1386a.
—, *Corticium solani* on, 204; effect of soi treatment on, 1158.
—, fungi on, 2903.
—, *Fusarium* on, 3287; in India, 1805.
—, iron deficiency in, in U.S.A., 2907.
—, Leguminosae witches' broom virus on, 72
—, *Macrophomina phaseoli* on, development o pycnidia of, 66.
— mosaic virus on groundnut, effect of, o yield, 2901.
— mottle virus on groundnut, 1386d.
—, mycoflora of kernels and soil of, in Israel 203.
—, *Mycosphaerella* on, control, 1386e; tech nique for forecasting, 807.
—, — *arachidicola* on, 2904; effect of early planting on, 1387a; factors affecting sporu lation of, 2905; renamed *M. arachidis*, 3357 sp. react. to, 2905.
—, — *arachidis* on, *M. arachidicola* renamed 3357.
—, — *berkeleyi* on, effect of early planting on 1387a; factors affecting sporulation of, 2905 isolation of cercosporin from, 3285; sp. react to, 2905.
—, pest control in, booklet on, 3606.
— pod rotting in U.S.A., 1386c.
—, premature death of in N. Nigeria, 3286.
—, *Pseudomonas fabae* on, immunity from, 486
—, — *solanacearum* on, serological technique for distinguishing, 809.
—, *Pythium* on, effect of irrigation on, 2572.
—, — *myriotylum* on, in Nigeria, (N.), 3286 causing pod rot, 204.
—, *Rhizoctonia* on, in India, 1805; Israel, 3608.
—, *Rhizopus* on stored, in Israel, 3608.
—, — *stolonifer* on, 2903.
— ring mottle virus on *Alysicarpus longifolius* and *Desmodium diffusum*, 1388.
— — — — on groundnut, symptoms of and transmission of, by seed, 1388.
— — spot virus on groundnut, hosts and symptoms of, 1389a.
— rosette virus, host range and properties of, 805.

roundnut rosette virus] on groundnut in C. Africa, 1386b; Malawi, transmission of, by vectors, 1157; comparison of, with soybean witches' broom virus on soybean, 2941b.
, *Sclerotium rolfsii* on, basidial formation by, 67, 885a; control, 808, 2211, 2906; effect of soil treatment on, 1158.
seed dressings in India, 1178e.
storage disorders, effect of gas concs. and temp. on, 2141.
stunt virus on groundnut, clover as overwintering host of, 2947h; host range of, 3634q; properties of, 13t, 3634p; purification of, 13t, 3634p; serology of, 13t.
, tomato spotted wilt virus on, symptoms of, 1389b.
, *Trichoderma viride* on, 204.
virus diseases, incidence, symptoms, and transmission of, 2e.
zybol, see Dinitrorhodanebenzene.
uar, see *Cyamopsis psoraloides*.
uava (*Psidium guajava*), *Botryodioplodia theobromae* on, effect of temp. on, 1054.
dieback in Reunion, *Cephalosporium* and *Monilia* associated with, 1179.
, *Phoma psidii* on, effect of temp. on, 1054.
uignardia citricarpa on citrus, see Citrus.
— on orange, 3438.
laricina on larch, 235h, 2849, 2850.
um arabic, as medium for isolating soil fungi, 262.
ycop 53 against *Cercospora nicotianae* on tobacco, 2512.
mnosporangium clavariiforme on *Juniperus communis*, 1755.
clavipes on apple, 2458.
confusum on *Crataegus*, *C. oxyacantha*, *Juniperus*, and *J. sabina*, 768.
gracile, separation of *G. clavariiforme* from, 1755.
ypsum, against groundnut pod rotting, 1386c.

3944 as seed treatment for pine, 1353b.
Hainesia lythri on strawberry, 699.
alogenophenylhydrazine and halogenophenylpyrazolone derivatives against *Colletotrichum lagenarium* on cucumber and *Corticium sasakii* on rice, 531.
apalosphaeria deformans on raspberry, 3311c.
arveston as seed treatment for *Festuca*, *Lolium*, and *Phleum*, 3310e.
versus difolatan, 3310e.
awthorn, see *Crataegus*.
CB against *Tilletia caries*, 3403; as seed treatment for wheat, 5b.
eat treatment (see also Hot air and Hot water) against *Botrytis cinerea* on strawberry, 1302b; *Colletotrichum coccodes* on *Capsicum* and tomato, 3207; fungi in soil, 1217; mushroom virus diseases, 3305; *Pezicula* on apple, 3134; *Phytophthora infestans* on tomato, 842d; *Rhizopus stolonifer* on strawberry, 1302b; strawberry latent C and vein-banding viruses, 3511; sugarcane grassy shoot and ratoon stunting viruses, 3555; *Verticillium cinerescens* on carnation, 230i; virus diseases, 1235.
— as seed treatment for barley, 3070.
—, effect of, on *Chrysanthemum* virus B, 649; sugarcane mosaic virus, 1712; *Verticillium cinerescens* on carnation and cucumber, 1175b, c.
[Heat treatment], injury to apple, 3134; to sugarcane, 1096.
Hebeloma crustuliniforme on pine, forming mycorrhiza, 1889.
—— on *Pseudotsuga menziesii* forming mycorrhiza, 2981.
Hedera helix, see Ivy.
Hedolit against *Peronospora tabacina*, 1329.
**Hedysarum coronarium*, *Verticillium dahliae* on, hosts of, 2747.
Helianthus, *Plasmopara halstedii* on, distribution on, 708.
— *annuus*, see Sunflower.
— *tuberosus*, *Agrobacterium tumefaciens* on, effect of X-rays on, 1860; hormonal and nutritional requirements of, 1189.
Helicobasidin, production of, by *Helicobasidium mompa*, 1437.
Helicobasidium compactum on coffee, 2234.
—— on teak, 1348, 3222.
— *mompa* on apple and mulberry, 3127.
——, production of helicobasidin by, 1437.
— *purpureum*, effect of tetrachlorethylene fungicides on, 2606.
——, similarity of mycelial strands of *Corticium solani* to, 250.
Helicopters, see Aircraft.
Helminthosporium, taxonomy of, 1922.
*— *allii* on onion, 1944.
— *biformae*, *H. dematoideum* (?)identical with, 1922.
— *gibberosporum* on banana, 3516.
— *halodes* on coconut, 709.
— *hawaiiense* on rice, 3416b.
— *pedicellatum* on *Echinochloa crus-galli*, grasses, maize, and sorghum, 2000.
— *rostratum*, paper on, 1853.
—— on *Cynodon dactylon*, 2051, 2357e.
*—— on *Eleusine coracana*, 1263.
*—— on maize, 981.
— *sacchari* on sugarcane, 1710a.
——, resemblance of *H.* on *Pennisetum glaucum* in Japan to, 2427.
— *solani* on potato, 1080.
— *tetramera* on *Capsicum*, 2351.
—— on *Zoysia japonica*, 1286.
— *triseptatum* on rice, 995.
— *vagans* on *Poa pratensis*, 1025.
Hemileia vastatrix on coffee, see Coffee.
Hendersonula toruloidea on vine, 2590.
Heptachlor in combination as seed treatment for pea, 1146.
Heptachloride in combination as seed treatment for beet and wheat, 578.
Hermal and Hermal L, effect of, on bacteria and fungi, 2965.
Heryl against *Lophodermium pinastri* on pine, 1758.
— 80, see thiram.
Hesperidin, effect of, on *Deuterophoma tracheiphila* on orange, 2721.
Heterocyclic derivatives as seed treatment for *Panicum miliaceum*, 1871c.
——, toxicity of, to fungi, 1871a, b.
Heterosporium allii in soil, 54.
*—— var. *cepivorum* on onion, 811.
Hevea brasiliensis, see Rubber.
Hexachlorobenzene against *Tilletia caries*, 933, 2688; *T. foetida*, 933; as seed treatment for barley, 961; sorghum, 313.
— versus organic Hg compounds, 477.
— in combination against *Ascochyta pisi*, 477; *Tilletia caries*, 2688.

Hexachloro-2-propanol against *Erysiphe polygoni* on bean, 2600a.
Hibiscus line pattern virus, proposed as name for *Hibiscus rosa-sinensis* disease, 349.
*— *cannabinus*, *Corticium solani* on, in Malaya, 512a; Surinam, 639.
— —, *Penicillium* in rhizosphere of, distribution of, 2035.
— —, *Sclerotium rolfsii* on, in Surinam, 639.
*— *esculentus*, *Alternaria hibisci* on, in Senegal, 265.
— —, *Cercospora abelmoschi* on, in Gabon, 1941.
— —, *Verticillium alboatrum* on, effect of *Cephalosporium* on, 2150.
— *rosa-sinensis* virus disease, *Hibiscus* line pattern virus proposed as name for, 349.
Hibitane against *Pseudomonas mors-prunorum* on plum, 2354.
Holly (*Ilex*) leaf spots, factors affecting, 653.
— scab, (?)caused by *Sclerophoma*, 653.
Hollyhock (*Althaea rosea*), *Puccinia lobata* on, in U.S.A. (*Ill.), differentiation of, from *P. malvacearum*, 1275.
Hop (*Humulus*), *Agrobacterium tumefaciens* on, in Argentina, 3033.
— chlorotic virus disease on hop, effect of, on quality, 3152.
— crinkle disease virus complex, study on, 3154.
—, infectious chlorotic mosaic virus on hop, electron microscopy of and transmission of, by sap, 1303.
' — latent ' virus, hop mosaic virus (?)identical with, 2291.
— mosaic virus on hop in England, 2291; (?)fibrous virus particles in, 2789; (?)identical with ' hop latent ' virus, transmission of, 2291.
— — — on *Nicotiana clevelandii*, 2291.
— nettlehead virus on hop in Poland, nutrient status in relation to, 396.
—, *Phytophthora citricola* on, resistance to, 1851d.
—, *Prunus* necrotic ring spot virus on, serological types of, 2354m; strs. of, 3153; symptomless infection by, 2354m; var. react. to, 3153.
—, *Pseudoperonospora humuli* on, in Argentina, 3033; Germany, 1844; Rumania, 1304; control, 231f, 1304, 2485a, 3522a, 3524; factors affecting, 1304; spread of, 3155; incubation period for, 1304; life cycle, 2485a; primary source of infection of, 2485a; wound infection by, 2485b; var. react. to, 3522b.
— ring and band mosaic, component of hop crinkle disease virus, 3154.
—, *Rosellinia necatrix* on, in Argentina, 3033.
—, *Verticillium* on, bulletin on, 2354o.
—, — *alboatrum* on, in England, 2354g; amino acid nutrition of, 545; eradication of, by grass cover, 398a; factors affecting, 2293; resistance to, 398b; survival of conidia of, 2354g; var. react. to, 2292.
—, — *dahliae* on, ecologically distinct from *V. alboatrum*, 398a.
— virus on hop, strs. of, transmission of, by sap, 2082; vectors, 397; to *Chenopodium foetidum* and *C. murale*, 2082.
Hordeum, see Barley.
— mosaic virus on *Agropyron trachycaulum*, *Elymus canadensis*, and *Hordeum jubatum* in Canada, reservoir of infection for, 1626.
[*Hordeum*], *Puccinia striiformis* on, in U.S.S over-summering of, 2417.
— *jubatum*, *Hordeum* mosaic virus on, 289.
**Hormiscium antiquum* on pine, 462.
Horse bean, see *Vicia faba* var. *equina*.
Horticritt, effect of, on *Botrytis cinerea*, 3651
Hot air treatment against *Gloeosporium* apple, 2354e; *Itersonilia pastinacae* parsnip, 1161.
— — —, effect of, on almond ' mosaic ' vir 2276; *Verticillium cinerescens* on carna and cucumber, 1175b.
— water treatment against *Gloeosporium* apple, 2354e; *Gloeotinia temulenta* on *Lol* 1285; *Pezicula* on apple, 3134; *Phytophth citrophthora* on citrus, 1002; *P. nicot* var. *parasitica* on citrus, 3434.
— — — as seed treatment for barley, 15 cabbage, 3255; cotton, 2433; rice, 9 wheat, 1538.
— — —, effect of, on almond ' mosaic ' vir 2276; apple storage disorders, 3135; *Op exaltata* virus, 2444; sugarcane ra stunting virus, 2816.
— — — for plant material, review of, 303
Humicola grisea in rhizosphere of bean, 25
— — on timber, 1363.
Humulus, see Hops.
Hyacinth, *Alternaria*, *Botrytis*, and *Fusar oxysporum* on, control, 1602.
—, *Xanthomonas hyacinthi* on, entry through hydathodes, 2369m.
Hyalesthes obsoletus transmitting tomato s bur virus, 2523.
Hyalodendron state of *Ophiostoma roboris*, 7
Hyamine, inhibition of *Curvularia eragrosti Ganoderma zonatum*, and *Marasmius mivorus* by, 3536.
Hydnaceae, review of, 270.
Hydrangea, *Ascochyta* on, symptoms of, 65
—, *Botrytis cinerea* on, in Austria, 12 symptoms of, 654, 1241.
—, *Cercospora* on, in Singapore, 1223.
—, *Corticium solani* on, symptoms of, 654
—, cucumber mosaic virus str. on, identificat of, 2443.
—, *Microsphaera polonica*, *Phyllosti Pythium*, and *Septoria* on, symptoms of,
Hydrocortisone, effect of, on transmissio potato witches' broom virus to tomato, 1
Hydrogen fluoride, relationship of, to tip b of *Gladiolus* leaves, 2040.
Hydroxypropyl methylcellulose, use of, pine, 3225a.
Hydroxyquinoline, resistance of *Rhiz stolonifer* to, 2375.
Hydroquinone as seed treatment for p 2327a.
Hymenostilbe kedrovensis on spider, 3648.
Hypholoma fasciculare on pine stumps, 253
Hyphomycetes, effect of temp. on growth 1443.
— trapping nematodes, book on, 2957; specificity in, 1190.
Hypochlorous acid, effect of, on *Colletotric musae* on banana, 389.
Hypocryphalus mangiferae (?)transmitting C *tocystis fimbriata* on mango, 2080.
Hypoderma desmazierii on Coniferae, 135
— *lethale*, resemblance of *H. mexicanum* pine to, 13m.
— *mexicanum*, hosts of, 2847f.
— — on pine, 13m.

Hypoderma] *saccatum*, resemblance of *H. mexicanum* on pine to, 13m.
Hypodermella laricis on larch, 1756.
Hypomyces solani f.sp. *cucurbitae*, diphenyl tolerance in, 858, 859.
Hypoxylon pruinatum in N. America, resemblance of *H.* on poplar in Czechoslovakia to, 2533.
— — on aspen, 3579.
— — on pine, 769.
— *rubiginosum* on timber, 2865b.

IARI publications, Bibliography of, 1905–1963, 1410.
Ilex, see Holly.
Imides, chemical constitution and fungitoxicity of, 3652.
Impatiens parviflora, cabbage black ring spot and cucumber mosaic viruses on, symptoms of, 3707.
Index Bergeyana, manual, 518.
— of Plant Diseases in U.S.A., to genera of pathogens, 2949.
Indole, effect of, on *Verticillium alboatrum* on tomato, 3570.
— acetic acid, production of, by *Plasmodiophora brassicae*, 469; *Schizophyllum commune*, 3345; *Ustilago*, 1463.
Inoculum potential, concept of, 3g.
Inocybe boltoni var. *ionipes* on oak forming mycorrhiza, 40.
— — — — on poplar, black, and *Liquidambar styraciflua*, forming mycorrhiza, 1891.
Insecticides, organophosphate, effect of fungicides on, 2607.
Insects, fungi on, factors affecting, 523.
— transmitting *Sphacelia sorghi*, 991.
Iodine, effect of, on *Fusarium oxysporum* f.sp. *gladioli* on *Gladiolus*, 348.
— for staining *Erysiphe betae* on beet, 566.
Ipomoea batatas, see Sweet Potato.
Ips pini transmitting *Ceratocystis* on Coniferae, 2191.
Iris, Bipolaris iridis on, 1276.
— mosaic virus on *Iris* in Netherlands, 350; named *Iris* latent mosaic virus in Israel, technique for obtaining virus-free plants, 350.
—, *Mystrosporium adustum* on, in N. Ireland, 4f.
—, *Penicillium corymbiferum* on, in Germany, symptoms of, 1615.
—, *Puccinia iridis* f.sp. *florideanum* on, 3635d.
—, *Sclerotinia convoluta* on, in U.S.S.R., imported from U.S.A., 655; control, 1614.
—, yellow mosaic virus on *Iris*, effect of oil sprays on, 2246.
Iron, as seed treatment for melon, 501a.
—, effect of, on *Fusarium martii* var. *pisi* on pea, 1379.
— deficiency in avocado pear, 392, 3149; groundnut, 2907; strawberry, 3145; vine, 2931d.
— toxicity in vine, 2931d.
— chelate against Fe deficiency in groundnut, 2907; peach lime-induced chlorosis, 1298.
— polyflavenoid against iron deficiency in groundnut, 2907.
— salt, effect of on *Puccinia graminis* on wheat, 3049.
— sulphate, against Fe chlorosis in avocado pear, 392; *Sphaerotheca mors-uvae* on currant, 2073.
Irpex flavus on timber, 1365.
Isaria vassiljevae on Lepidoptera pupae, 3648.
Isariopsis griseola on bean, 3274.
— —, *Phaeoisariopsis griseola* on bean incorrectly referred to, 2343.
Isobutyl-*o*-coumarate, translocation of, in apple, 2263.
Isoxazolone, substituted, against *Podosphaera leucotricha*, 3129.
Ist. agron., Oltremare, catalogue of publications, 1855.
IT.3296 against *Venturia inaequalis*, 3129.
Itersonilia pastinacae on parsnip, 1161, 3296.
— *perplexans* on *Chrysanthemum*, see *Chrysanthemum*.
Ivy (*Hedera helix*), *Glomerella cingulata* on, control, 2247.
—, *Phytophthora nicotianae* var. *parasitica* on, 134.
*—, *Xanthomonas hederae* on, in New Zealand, symptoms of, 3464.
Ixora, *Cercospora* on, in Singapore, 1223.
*— *parviflora*, *Colletotrichum ixorae* on, in India, symptoms of, 2248.
Izal, inhibition of *Curvularia eragrostidis*, *Ganoderma zonatum*, and *Marasmius palmivorus* by, 3536.

Janthinellin, fungistatic action of, 865.
Jasmine (*Jasminum*), *Cercospora jasminicola* on, control, and sp. react. to, 3465.
*—, *Colletotrichum dematium* on, in India, symptoms of, 2248.
Johnson grass, see *Sorghum halepense*.
Juglans, see Walnut.
Juniperus damping-off in U.S.S.R., 2327b.
—, *Gymnosporangium confusum* on, 768.
—, *Kabatina juniperi* on, in Germany and Netherlands, 1350.
— *communis*, *Gymnosporangium clavariiforme* on, in U.S.A., separation of, from *G. gracile*, 1755.
— *sabina*, *Gymnosporangium confusum* on, geographical distribution of, 768.
— *virginiana*, effect of toxin produced by *Fomes annosus* on, 2862.
Jute (*Corchorus capsularis* and *C. olitorius*), *Macrophomina phaseoli* on, factors affecting and var. react. to, 640.
— yellow mosaic virus on jute in India, transmission of, by vectors, 1599.

Kabatiella caulivora on clover, 668, 917, 2940b.
Kabatina juniperi on *Juniperus*, 1350.
— *thujae* on *Thuja occidentalis*, 1350.
Kalanchoë, *Agrobacterium tumefaciens* on, induction of tumours in, 2167.
Kale (*Brassica oleracea* var. *acephala*), *Alternaria brassicae* and *A. brassicicola* on, control, 2594g.
**Kalmia latifolia*, *Phyllosticta latifolia* on, in Czechoslovakia, 1011.
Kankerdood against cacao greenpoint gall, 3039.
Karathane against *Podosphaera leucotricha*, 232b, 1650, 2459; *Sphaerotheca fuliginea* on Cucurbitaceae, 3301; *S. mors-uvae* on currant, 2073; on gooseberry, 697; *Uncinula necator*, 2369b.
— versus 6-azauracil, 232b; daconil-2787, 2369b.
— in combination against *Podosphaera leucotricha*, 374.

[Karathane] L.C. against *Botrytis allii* and *B. septospora* on onion, 3292.
Kasugamycin as seed treatment for rice and soil disinfectant, 3425.
Kelthane against mites in cultures, 3700.
**Kerria japonica*, *Phyllosticta petrakii* on, in Czechoslovakia, 1011.
Khuskia oryzae, C and N nutrition of, 3664.
— — inhibiting seed germination, 1857.
— — on banana, 1053.
— — on maize, 982, *1513h.
— — on rice, 3092.
Kinetin, effect of, on tomato spotted wilt virus on *Petunia*, 3704.
Kitazin against *Pyricularia oryzae*, 235k.
Kosugamycin (Kosumin) against *Pyricularia oryzae*, 235k.
Kregasan, effect of, on germination of soybean, 2898.
Kuprikol, toxicity of, to pine, 1758.

**Laburnum* mosaic virus on *Laburnum* in Italy, transmission of, by chip-budding, to *Acer platanoides*, etc., 754.
Laccaria laccata on pine forming mycorrhiza, 2979.
Lactobacillus delbrueckii on radish, 2177.
Lactuca canadensis, immunity of, from *Erwinia carotovora*, 816.
— *sativa*, see Lettuce.
(?)*Lagena radicicola* in barley roots, 2592o.
Lamium amplexicaule, lucerne mosaic virus on, in Queensland, 1238.
Lanstan against *Urocystis cepulae* on onion, 2600j; as soil disinfectant, 550a.
Lantana, *Cercospora* on, in Singapore, 1223.
Lappula echinata, *Verticillium alboatrum* and *V. dahliae* on, 84.
Larch (*Larix*) damping-off in U.S.S.R., 2327b.
—, *Fomes officinalis* and *F. pini* var. *abietis* f. *laricis* on, in U.S.S.R., 2527.
—, *Guignardia laricina* on, in Japan, 235h, 2849, 2850.
—, *Hypodermella laricis* on, factors affecting, 1756.
—, *Meria laricis* on, geographical distribution of, 18491.
—, mould fungi on seeds of, inhibition of by UV radiation, 3224.
—, *Polyporus schweinitzii* and *P. sulphureus* on, in U.S.S.R., 2527.
— shoot blight, bibliography of, 2326.
Larix, see Larch.
Lasiodiplodia frezaliana, relationship of *Botryodiplodia theobromae* to, 1678.
Lasiosphaeria geranii, associated with dieback of *Pelargonium capitatum*, 1678.
Lathyrus, *Uromyces pisi* f.sp. *lathyri* on, 1028.
— *odoratus*, see Sweet pea.
*— *sativus*, *Sclerotium rolfsii* on, in India, 2669.
— —, *Uromyces pisi* f.sp. *lathyri* on, 1028.
Lauric acid, effect of, on conidia of *Oidium begoniae* var. *macrosporum* and *Uncinula necator*, 3654.
Laurus nobilis, *Cephalosporium* on, in U.S.S.R., 1342.
— —, *Macrophoma georgica* on, effect of sunlight on, transmission of, to cherry laurel, false camphor, and lemon, 656.
— —, *Verticillium* on, 1342.
— —, — *alboatrum* on, symptoms of, 3576.
Lavatera arborea, *Malva* vein clearing virus c in Greece, hosts, properties, and transmissi of, 1502.
Lead arsenate against *Ascochyta tarda* coffee, 1264.
LEC in combination against *Aureobasidi pullulans* and *Ceratocystis* on timber, 254
Leek (*Allium porrum*), antibiotic effect of extracts of, on *Gliocladium roseum*, 810.
—, *Phytophthora porri* on, in Switzerland, 1
Legislation against plant diseases, by se health certification, 1203.
— — — — — in Canada, 1201a, 1886; Germ 1202; Netherlands, 1201b; Sweden a U.S.A., 2377.
Leguminosae, clover yellow mosaic virus c natural spread of, to bean, 2883.
—, coconut cadang-cadang disease can inf 236b.
—, fungi in rhizosphere of, in U.S.S.R., 29 in root nodules, 1287.
—, *Gliocladium roseum* in rhizosphere of, 11
—, groundnut ringspot virus can infect, 13
—, lucerne mosaic virus on, natural spread to bean, 2883.
—, pathogens of, in Lithuania, 1849n.
—, phytoalexins in, selective toxicity of, 3v
—, tobacco streak virus on, natural spread to bean, 2883.
—, *Trichoderma viride* in rhizosphere of, 118
—, virus diseases of, in U.S.S.R., 1 1513w.
— witches' broom virus, hosts of and tra mission of, by vectors, 724.
Leleba oldhami, *Erwinia sinocalami* on, sy toms of, 340.
Lema melanopa transmitting cocksfoot mot virus, 1628; *Phleum* mottle virus, 3310c.
Lemon (*Citrus limonia*), *Aspergillus foeti* on, 3439.
—, *Cercospora gigantea* on, in U.S.A., 2945
*—, citrus shell bark disease on, in Ita symptoms of, 614.
—, — xyloporosis virus on, in Italy, tolera of, 612.
—, *Deuterophoma tracheiphila* on, effect nobiletin on infection by, 2721.
— dieback in India, similarity of symptoms to greening disease virus, 2229.
—, *Diplodia* on, 3498.
—, *Fusarium* on, interaction of *Tylenchu semipenetrans* and, 2431.
—, — *solani* on, *Tylenchulus semipenetr* associated with, 1000.
—, *Geotrichum candidum* on, 877.
—, *Macrophoma georgica* can infect, 656.
— mosaic in Vietnam, 2200.
— virus, undetermined, in Cyprus, 2944b.
Lens esculenta, see Lentil.
Lentil (*Lens esculenta*), *Fusarium oxysporum* in U.S.S.R., 1513i.
—, *Pseudomonas radiciperda* on, in U.S.S. 2347.
—, red clover mottle virus can infect, 141.
*—, *Sclerotium rolfsii* on, in India, 2570.
—, *Uromyces viciae-fabae* on, control, 205.
Lentinus edodes, notes on, 2928.
— *lepideus* on timber, 2547, 3249.
Lenzites abietis and *L. ambigua*, synonyms *L. laricinus*, 1919.
— *betulina* on aspen, 762.
— *laricinus*, synonymy of, 1919.
— *pinicola*, synonym of *L. laricinus*, 1919.

Lenzites] *saepiaria*, asexual nuclear behaviour of, 1924.
— —, effect of pH of nutrients on, 1767.
— — on pine, 2538.
— — on spruce, 2847c.
— — on timber, 2547.
— *squamosus*, effect of pH of nutrients on, 1767.
— *trabea*, effect of light and temp. on, 2618.
— — on timber, see Timber.
Lepidoptera pupae, *Isaria vassiljevae* on, description of, 3648.
**Leptochloa panicea*, *Bipolaris micropa* on, in India, 664.
Leptodiscus terrestris on *Lotus corniculatus*, 670, 3124.
Leptosphaeria avenaria on oats, 309, *1516.
**— coniothyrium* on *Anogeissus latifolia*, 267.
**— —* on raspberry, 1663.
— — on rose, 643.
— *dumetorum*, *Leptosphaeria* on *Dieffenbachia* resembling, 650.
— *elaoudi* associated with dieback of *Pelargonium capitatum*, 1678.
— *maculans*, development of pycnidia of, 561.
— — on Brussels sprouts, 2594g.
— — on cabbage, see Cabbage.
— — on *Matthiola incana*, 643.
**— nodorum* on barley, 1516.
— — on *Bromus inermis*, 663.
— — on wheat, see Wheat.
— *obtusispora*, perfect state of *Coniothyrium concentricum*, 2048.
**— sacchari* on sugarcane, 2358d.
— *salvinii* on rice, see Rice.
— — var. *irregulare* on rice, 992c.
— *senecionis*, *Leptosphaeria* on *Dieffenbachia* resembling, 650.
Leptosphaerulina arachidicola causing leaf scorch of *Arachis*, 806.
— *australis* and *L. briosiana* on clover, 2257.
— *briosiana* on lucerne, 366.
— *trifolii* on clover, 2257.
Leptothyrium sumacis on *Rhus typhina*, 2083.
Lespedeza, *Phyllachora lespedezae* on, host-parasite relations and symptoms of, 368.
Lettuce (*Lactuca sativa*), *Arabis* mosaic virus on, in England, symptoms of, 2915.
—, aster yellows virus on, 3023.
—, beet western yellows virus alone and + lettuce mosaic virus on, 496.
— big vein virus on lettuce in Canada, *3384; in France, 234; control and var. react. to, 2916.
—, *Botrytis cinerea* on, control, 5a, 26.
—, *Bremia lactucae* on, in England, 2594a; U.S.A., 498; control, 3297.
**—, Cercospora longissima* on, in India, morphology and symptoms of, 499.
— corky root, aetiology of, 500.
—, *Erwinia carotovora* on, in U.S.A., 816.
**—*, lucerne mosaic virus on, calico symptoms of, 815.
— mosaic virus on *Chenopodium quinoa*, 1933.
— — — on lettuce in *Argentina, 814; France, 234; control, 1390; effect of, on yield, 496; factors affecting dissemination of, 1492d; production of virus-free seed, 1492d; symptoms of, 234; transmission of, 234; by vectors, 1390; var. react. to, 838.
— — — on safflower, 1307, 3527.
— — — + beet western yellows virus on lettuce, effect of, on, 496.
[Lettuce] necrotic yellows virus on lettuce in Australia, *Gomphrena globosa* virus related to, 283.
— — — — on *Nicotiana glutinosa*, 497, 1939.
—, *Pseudomonas marginalis* on, in Nigeria, 1404d.
—, *Pythium* on, 2939b.
— ringspot virus, tomato black ring virus str. on watermelon serologically similar to, 216.
—, *Sclerotinia minor* on, control, 58c.
— tipburn, (?)Ca deficiency causing, 3610; factors affecting, 1392.
—, tobacco necrosis virus on, transmission of, by *Olpidium brassicae*, 1391.
**—*, tomato spotted wilt virus on, in Argentina, 2143.
Leucopaxillus cerealis on pine, forming mycorrhiza, 2979.
Leucoporus sacchari on sugarcane, 732, 2817.
**Leveillula taurica* on *Centaurea cyanus* and *C. imperialis*, 1015.
— — on *Ricinus communis*, 1308.
Levorin against *Microsphaera lonicerae* on *Lonicera tartarica*, 3335; *Verticillium dahliae* on cotton and as seed treatment for cotton, 634.
**Liatris spicata*, *Phyllosticta liatridis* on, in Czechoslovakia, 1011.
Light, effect of, on development of *Puccinia helianthi* on sunflower, 2161i; germination of uredospores of *Uromyces appendiculatus*, 793; sporulation of *Alternaria solani*, 2386; *Verticillium dahliae* on cotton, 630.
**Ligniera junci* on *Lolium multiflorum* and *L. perenne*, 140.
Lignin biochemistry, book on, 2165.
Ligustrum, see Privet.
Lilac (*Syringa vulgaris*) leaf roll necrosis in U.S.A., air pollution causing, 1616.
**—, Phytophthora citricola* on, in Canada, 1603.
—, *Pseudomonas* on, comparison of, with *P.* on pear, 1422.
—, — *syringae* on, in Poland, symptoms of, 1176g.
Lily (*Lilium*), *Colletotrichum dematium* on, effect of, on yield, 351.
—, — *lilii* on, control, 3114; factors affecting, 352; (?)synonymous with *C. liliacearum*, 657.
—, *Corticium solani* on, effect of, on yield, 351.
— curl stripe disease, virus-like particles associated with, 12v.
—, *Cylindrocarpon radicicola* on, effect of, on yield, 351.
**—, Phyllosticta liliicola* on, in Czechoslovakia, 3355.
—, *Sclerotium wakkeri* on, symptoms of, 1277.
— virus disease, partial purification of particles from, 12w.
Lima bean, see *Phaseolus lunatus*.
Lime (*Citrus aurantifolia*) dieback in India, similarity of symptoms of, to greening disease virus, 2229.
—, *Fusarium solani* on, effect of temp. on spore forms of, 1452.
— tree, see *Tilia*.
— -sulphur, translocation of, in apple, 2263.
Linseed (*Linum usitatissimum*), *Alternaria lini* on, genetics of resistance to, 1598.
—, *Fusarium oxysporum* f.sp. *lini* on, in India, 3157.
—, *Melampsora lini* on, physiologic races of and var. react. to, 2790.
Linum usitatissimum, see Flax, Linseed.

Liquidambar styraciflua, *Corticium galactinum* on, 2834.
— —, *Endogone fasciculata* on, forming mycorrhiza, 1892.
— —, *Ganoderma lucidum* on, in U.S.A., 1108.
— —, mycorrhiza, fungi forming, 1891.
Liriodendron tulipifera, *Armillaria mellea* on, in U.S.A., 445.
— —, *Cylindrocladium scoparium* on, in U.S.A., 1111.
— —, *Endogone fasciculata* on, forming mycorrhiza, 1892.
— —, *Phialophora* on, in U.S.A., 445.
Liro-maneb against *Diplocarpon rosae* on rose, 2750.
Lolium, *Bromus* mosaic virus on, in Germany, 2049.
—, *Gloeotinia temulenta* on, in Netherlands, 1285, 3312.
— mosaic virus on *Lolium* in Denmark, distribution of, 510b.
—, oats necrotic mottle virus can infect, 2219.
—, *Polymyxa* in roots of, in Great Britain, 2592o.
—, *Sclerotinia homoeocarpa* on, 2254.
— *multiflorum*, barley yellow dwarf virus on, effect of, on, 3310b.
*— —, *Ligniera junci* on, in Czechoslovakia, 140.
— —, *L. perenne* mosaic virus on, effect of, on, 3310b.
— *perenne*, barley yellow dwarf virus on, in England and Wales, transmission of, by vectors, 2758.
— —, *Gloeotinia temulenta* on, review of, 2253; technique for detecting, 1487.
*— —, *Ligniera junci* on, in Czechoslovakia, 140.
*— —, *Mastigosporium album* on, in England, 2759.
— — mosaic virus on *L. multiflorum*, 3310b.
— —, *Puccinia coronata* on, control, 3118.
— —, raspberry ring spot virus on, transmission by nematodes, 2406.
Longidorus attenuatus transmitting tomato black ring virus, 216, 1823.
— *elongatus* transmitting raspberry ring spot and tomato black ring viruses, 2406.
Lonicera tartarica, *Microsphaera lonicerae* on, control, 3335.
Lophodermium canberrianum and *L. juniperinum* on Coniferae, 1351.
— *macrosporum* on spruce, 1131.
— *pinastri* on Coniferae, 1351.
— — on pine, see Pine.
— — on trees, 749.
Loquat (*Eriobotrya japonica*), *Monochaetia indica* on, effect of C and N sources on growth of, 1456a,b.
—, *Phytophthora nicotianae* var. *parasitica* on, in Lebanon, 686.
—, *Pseudomonas eriobotryae* on, control, 11f.
—, *Sclerotium* on, control, 687.
Lotus corniculatus, *Corticium solani* on, 3124; in U.S.A., 670.
— —, *Fusarium* on, in U.S.A., 670.
— —, — *oxysporum*, *F. roseum*, *F. solani*, and *Gibberella fujikuroi* on roots of, 3124.
— —, *Leptodiscus terrestris* and *Macrophomina phaseoli* on, 3124; in U.S.A., 670.
— —, *Pseudomonas fabae* on, immunity from, 486.
*— —, *Stemphylium loti* on, in Canada, 3384.
[*Lotus corniculatus*], *Talaromyces vermiculatus* on roots of, 3124.
— —, *Thielaviopsis basicola* on, factors affecting, 1029.
Lucerne (*Medicago sativa*), *Acrostalagmus* and *Alternaria tenuis* on seed of, 2765.
—, *Ascochyta pisi* on, in U.S.S.R., 2879.
—, — *sojaecola* on, in U.S.S.R., 3600.
—, *Aspergillus* on seed of, 2765.
—, *Botrytis cinerea* on seed of, in Czechoslovakia, 2767.
—, *Cladosporium cladosporioides* on seed of, 2765.
—, *Colletotrichum trifolii* on, pectate lyase production by, in relation to pH, 363.
*—, — *truncatum* on, in Pakistan, 3120.
—, *Corynebacterium insidiosum* on, in Czechoslovakia, 3123; *Victoria, 3122; colour of seed in relation to, 3123; effect of *Ditylenchus dipsaci* on var. react. to, 2456; resistance to, 367; testing for, 2160g.
—, *Erwinia herbicola* on, in Czechoslovakia, colour of seed in relation to, 3123.
—, fungi in rhizosphere of, effect of on germination of, 1843f.
—, *Fusarium* on, 2765, 3473; in *India, 2455.
—, — *oxysporum* on, effect of on movement of *Pratylenchus penetrans* to roots of, 2768.
—, *Gonatobotrys* on seed of, 2765.
—, *Leptosphaerulina briosiana* on, host-parasite relationship of, 366.
— mosaic virus on bean, 2883, 2947e.
— — — on *Chenopodium album* and clover, 1142.
— — — on cucumber, 2947e.
(?) — — — on currant, 2282.
— — — on Leguminosae, 2883.
*— — — on lettuce, 815.
— — — on lucerne in Czechoslovakia, 2766; Queensland, 1238; hosts of, 1238, 2766; in activation of, by photosensitizing dyes, 2662; properties of, 2766; *Robinia* mosaic virus not related to, 1346.
— — — on *Nicotiana rustica*, 2369o.
— — — on tobacco, 1724, 2947e.
— — — on tomato, 838, 14921.
— — — str. on bean, 282.
— — — strs. on tobacco, 281.
—, *Mycosphaerella pinodes* on, in U.S.S.R., 2879.
—, *Oedocephalum* and *Penicillium* on seed of, 2765.
—, *Phoma herbarum* var. *medicaginis* on, in Bulgaria, overwintering of, 3474.
—, *Phytophthora megasperma* on, resistant strs. of, 2769.
—, *Pleospora herbarum* on, in Germany, 1027; distinction of, from *Stemphylium sarciniforme*, 3121.
—, — — on seed of, 2765.
—, potato witches' broom virus on, transmission of, by vectors, 2660.
—, *Pseudomonas fabae* on, in U.S.S.R., resistance to, 486.
—, *Pseudopeziza medicaginis* on, in U.S.S.R., 2940b, 3034; control, 1639.
—, *Pyrenopeziza medicaginis* on, in Yugoslavia, 2770.
— root rot in relation to *Fusarium* in roots and rhizosphere of, 365.
—, *Sclerotium rolfsii* on, in U.S.A., 2946b.
— snow mould, borax inhibition of cyanogenesis in, 3477.

[Lucerne], *Sporonema phacidioides* on seed of, conidial form of, 2765.
—, *Stemphylium* on, in Germany, 1027.
—, — *sarciniforme* on, distinction of, from *Pleospora herbarum*, 3121.
—, *Trichoderma viride* on, *Pratylenchus penetrans* in relation to, 892.
—, *Uromyces striatus* on, in U.S.S.R., 2940b.
—, *Verticillium* on, biological control, 1180e; method for testing for resistance to, 2160g.
—, — *alboatrum* on, 84; in Hungary, 3476; antagonism of soil fungi to, 2055; spread and symptoms of, 3476; toxin in culture filtrate of, 3319.
—, — *dahliae* in rhizosphere of, 1180e.
—, — — on, 84.
**Luffa acutangula*, cucumber green mottle virus on, in India, host range and properties of, 817.
*— —, *Phytophthora nicotianae* var. *parasitica* on, 218.
Lupin (*Lupinus*), *Ascochyta sojaecola* on, in U.S.S.R., 3600.
—, bean yellow mosaic virus on, in U.S.S.R., 1142.
—, — — — — str. on, effect of *Pelargonium* sap on and transmission of, by seed, 1640.
—, *Botrytis cinerea*, *Ceratophorum setosum*, *Corticium solani*, and cucumber mosaic virus on, in U.S.S.R., 1030.
—, *Erwinia carotovora* on, effect of and overwintering of, 3125.
—, *Erysiphe cichoracearum* var. *lupini* on, in U.S.S.R., 1030.
—, *Fusarium* and *F. oxysporum* on roots of, in S. Australia, 2852.
—, — — f.sp. *lupini* on, susceptibility to, 3478.
—, — *solani* and *Macrophomina phaseoli* on roots of, in S. Australia, 2852.
—, pea enation mosaic virus on, in U.S.S.R., 1142.
—, *Pseudomonas fabae* on, in U.S.S.R., resistance to, 486.
—, — *lupini* and *P. xanthochlora* on, effect of and overwintering of, 3125.
—, *Rhizoctonia* on, pathogenicity of isolates of, 579.
—, *Septoria lupini* and *Stemphylium sarciniforme* on, in U.S.S.R., 1030.
—, *Uromyces lupinicola* on, in U.S.S.R., 1030, 2940b.
—, *Verticillium dahliae* on, 2747.
Lutidinoxin, fungicidal activity of, 532.
Lychnis alba, tobacco mosaic virus str. on, resembling ribgrass str., 2665.
Lycomarasmin, production of, by *Fusarium oxysporum* f.sp. *melonis*, 541.
Lycoperdon pyriforme, synthesis of urea in, 2613b.
Lycopersicon, beet curly top virus on, sp. react. to, 2828.
—, *Phytophthora capsici* and *P. nicotianae* var. *parasitica* can infect, 2159h.
— *esculentum*, see Tomato.
— *hirsutum*, beet curly top virus on, immunity from strs. of, 2828.
— *peruvianum*, *Corynebacterium michiganense* on, control, var. react. to, 748.
— *pimpinellifolium*, potato virus Y str. on, pathogenicity and strs. of, 1688.
Macrophoma georgica on *Laurus nobilis*, 656.
— *tumefaciens* on poplar, 158d.
Macrophomina phaseoli, effect of trace elements on, 3670.
— —, hosts of, 66.
— —, in soil, 3683.
— —, inhibition of, by trichothecin, 2972.
— — on bean, 3274.
— — on cabbage, 782.
— — on cotton, 3110.
— — on jute, 640.
— — on *Lotus corniculatus*, 670, 3124.
— — on lupin roots, 2852.
— — on maize, 1513h, *3632b.
— — on *Parthenium argentatum*, 3554.
— — on pine roots, 2852.
— — on sunflower, 2295.
— — on *Tephrosia vogelii*, 3530.
— — on tobacco, 2385a,b.
— —, pycnidia production by, 1453.
Macrosiphum transmitting hop mosaic virus, 2291.
— *avenae* transmitting barley yellow dwarf virus, 1991, 3395.
— *californicum* transmitting cucumber mosaic virus, 2204.
— *euphorbiae* transmitting cucumber mosaic virus, 1823; pea enation mosaic virus, 75b, 1143; *Ranunculus* mottle virus, 2044.
Macrosporium commune on broad bean, 1801.
Macrosteles fascifrons transmitting aster yellows virus, 2678, 3023; clover phyllody virus, 2659, 3376.
— *laevis* transmitting aster yellows virus, 1953; oat diseases, 3076.
— *quadripunctulatus* transmitting *Gladiolus* virus, 1492i.
Maesopsis eminii, *Fusarium solani* on, in Tanzania, 1745b.
Magnesium, use of, against K deficiency in tomato, 3208.
— deficiency in avocado pear, 3149; coconut, 3389; strawberry, 3145; vine, 2931c.
—, effect of, on local lesion formation by sunnhemp mosaic virus on *Cyamopsis psoraloides*, 3604; on resistance of cucumber to *Erysiphe cichoracearum*, 2145.
— toxicity in vine, 2931c.
— acid sulphate as seed treatment for beet, 2556.
**Magnolia grandiflora*, *Glomerella cingulata* on, in India, symptoms of, 2248.
Maize (*Zea mays*), *Alternaria tenuis* on, in U.S.S.R., 2706.
—, *Aspergillus* on seed of, effect of on, 3416a.
—, — *candidus* on stored, effect of moisture content and temp. on, 3085.
—, — *flavus* and *A. ochraceus* on, in U.S.S.R., 2706; effect of moisture content and temp. on, 3085.
—, bacteria on, migration of, 1415.
—, *Bromus* mosaic virus on, 2755; effect of actinomycin D on, 3702; multiplication of, 2422a; synthesis of viral ribonucleic acids in, 277.
*—, *Cephalosporium* on, in India, 3632b; effect of, on, 3416a.
*—, — *acremonium* on, in India, 3632b.
—, — *maydis* on, in U.A.R., 982.
—, *Cochliobolus carbonum* on, effect of calcium cyanamide on, 2370a,b; isolation and symptoms of, 1999.

[Maize, *Cochliobolus*] *heterostrophus* on, cytoplasmic inheritance of susceptibility to, 113, 236i; effect of Ca cyanamide on, 2370a,b.
—, — *sativus* can infect, 595.
*—, *Corticium sasakii* on, in India, 3632b.
*—, — *solani* on, in Sarawak, 2358d.
—, cucumber mosaic virus on, in Yugoslavia, causing stripe mosaic, transmission of, mechanically, 599.
—, *Curvularia inaequalis* on, control, 2003.
*—, *Didymella exitialis* on, in India, 3632b.
—, differential resistance of cell walls of to enzymes from *Colletotrichum lindemuthianum*, 2988.
*—, *Diplodia macrospora* on, in India, 3632b.
—, — *maydis* on, control, 605; effect of Cl and K on, 604; var. react. to, 979.
— disease in Papua, resemblance of to maize pellucid ring spot virus in Nigeria, 978.
— diseases in U.S.A., control, revised handbook on, 598; in U.S.S.R., 2706.
(?)— dwarf mosaic virus on *Alopecurus carolinianus*, 2006.
— — — — on *Bromus*, 975a.
(?)— — — — on *Festuca*, 2006.
— — — — on Gramineae, 975b.
— — — — on grasses, 2756.
— — — — on maize in U.S.A., 107, 975a, 1558, (?)2006, 2946a, 3081, 3410, 3411; description and distribution of, 3410; effect of, on yield, 3411; host range, properties and partial purification of, 975b; occurrence of near *Sorghum halepense*, 2946a; overwintering host of, 3411; relationship of to other virus diseases, 3410; serological comparison of isolates of, 1558; symptoms of, 3411; transmission of by vectors, 975b, 3081.
— — — — on rice, 2711.
— — — — on sorghum, 975b, 2006.
— — — — on *Sorghum dochna*, 2006.
(?)— — — — on *S. halepense*, 975a,b, 2006, 3081, 3411.
— — — — on *Tripsacum dactyloides*, 3411.
—, effect of gnotobiotic environment on growth of, 1517.
—, *Erwinia carotovora* f.sp. *zeae* on, in India, 2004.
—, fungi on, effect of seed treatment on, 112; isolation of, 1857.
—, *Fusarium* on, in U.S.S.R., 1513h; var. react. to, 979.
—, — *acuminatum* on, in U.S.S.R., 985.
—, — *culmorum* on, in Germany, 984.
—, — *oxysporum* on seed of, effect of on, 3416a.
—, — *poae* on, in Germany, 984.
—, — *roseum* on, effect of coating seed with bacteria on, 12q.
—, — *sambucinum* on, in U.S.S.R., 2706.
—, *Gibberella fujikuroi* on, in Germany, 984; U.A.R., 982; U.S.S.R., 985; comparison of incidence of kernel and stalk infection by, 116; effect of, 985; of crop rotation on, 983; factors affecting, 984; thickened hyphae as a survival mechanism in, 12s; transmission of, by vectors, 3634g.
—, — — on seed of, effect of, 3416a.
—, — — var. *subglutinans* on, effect of, 1565.
—, — *zeae* on, 2220; in India, *3632b; U.A.R., 982; U.S.S.R., 1513h; associated with root rot, 983; control, 90; effect of, 1565.
*—, *Gloeocercospora sorghi* on, in India, 3632b.
[Maize], *Helminthosporium pedicellatum* on, in U.S.A., 2000.
—, — *rostratum* on, 3632d; in *India, symptoms of, 981.
—, inhibition of growth of, by polymyxin, 2973; of *Ophiobolus graminis* by root extracts of, 254; of root growth of by toxin from *Cochliobolus heterostrophus*, 3083.
—, *Khuskia oryzae* on, in U.A.R., 982; U.S.S.R., *1513h.
— leaf fleck disease, review of, 110.
— — spot virus disease in Bulgaria, incidence of and transmission of, by vectors, 3041.
—, *Macrophomina phaseoli* on, in India, *3632b; U.S.S.R., 1513h.
—, microflora in rhizosphere of, seasonal fluctuations in, 2001.
—, Mo deficiency in, relation of, to seed reserves, 986.
— mosaic virus on grasses, 599.
— — — on maize in Latin America, 974; Yugoslavia, 599; review of, 974; study of, 1854b, 2425.
— mottle mosaic (?genetic) on maize in Yugoslavia, 599.
—, *Musa textilis* mosaic virus on, transmission of, mechanically, 131.
—, *Ophiobolus graminis* on, 3084.
— pellucid ring spot virus in Nigeria, resemblance of maize disease in Papua to, 978.
—, *Penicillium* on, in U.S.S.R., 1513h; effect of, 3416a.
—, — *bilaji chalabuda* and *P. notatum* on, in U.S.S.R., 2706.
—, — *oxalicum* on, in U.A.R., 982; control, effect on yield, hosts, survival, and symptoms of, 117.
—, — *rugulosum* on, in U.S.S.R., 2706.
—, persistence of chemicals on seeds of, 3086.
*—, *Phaeosphaeria maydis* on, in India, 3632b.
*—, *Phyllosticta zeae* on, in Czechoslovakia, 3355.
—, *Phymatotrichum omnivorum* on, physiologic responses of resistant and susceptible root tissues of, to, 2619.
—, *Physoderma maydis* on, in U.S.S.R., 1513h.
—, *Pseudomonas holci* on, in U.S.S.R., 2940a.
—, — *lapsa* on, in India, *2004, 3632b.
—, — *syringae* on, in U.S.A., symptoms of, 2708.
—, *Puccinia graminis* on, histological study of resistance to, 1259.
*—, — *polysora* on, in India, 3632b.
—, — *sorghi* on, in Somalia, 1993; U.S.A., 3413; U.S.S.R., 1513d,h; hybridization of, 1995; morphology of, 1993; self-inhibition of uredospore germination in, 1560; significance of (?)*Oxalis stricta* as intermediate host of, 1994; sources of spring infection of, 3413; var. react. to, 979.
*—, *Pythium aphanidermatum* on, in Malaya, 512a.
—, — *arrhenomanes* on, effect of antagonistic actinomycetes on, 83; host-parasite relationship of, 236h; infection of and penetration by, 118.
*—, *Rhizoctonia zeae* on, in India, 3632b.
—, *Rhizopus stolonifer* on, in U.S.S.R., 2706.
— root rot, *Gibberella fujikuroi* and *G. zeae* associated with, 983.
— rough dwarf virus in *Delphacodes striatella*, 108; electron microscopy of particles in, 1556a,b.

[Maize rough drawf virus] on maize, 108; chemical changes induced by, 109; technique for purifying, 1557; transmission of by vectors, 1524a,b,c.
— — — — on wheat, 2654.
*—, *Sclerospora macrospora* on, in Austria, 7; India, *1998; distribution of, 3631; factors affecting, 7.
—, — *philippinensis* on, control, 21.
*—, — *rayssiae* on, in India, 3632b.
—,— — var. *zeae* on, in India, new var., symptoms of, 2707.
—, sorghum red stripe virus on, in U.S.S.R., symptoms of, 923.
—, *Sphacelia sorghi* on, in Nigeria, 991.
—, *Sphacelotheca reiliana* on, in U.S.S.R., 1513c,h, 2706; effect of crop rotation on, 110; host specialization of, 602; specificity of, 1260.
—, *Sphaerulina maydis* on, *Phaeosphaeria maydis* proposed for, 3632a.
— streak virus on maize in E. Africa, 3412; genetics of resistance to, 2941a, 3412.
— stripe mosaic, cucumber mosaic virus causing, 599.
— stunt virus on maize in Latin America, review of, 974; U.S.A., transmission of, by vectors, 600.
—, sugarcane mosaic virus on, susceptibility of, to Johnson grass str., 976.
—, *Trichometasphaeria turcica* on, in Mauritius, 2943b; U.S.S.R., *1513h; non-transmission of, by seed, 1564; screening for resistance to, 603; var. react. to, 979.
—, *Ustilago maydis* on, in Java, 236e; Sarawak, *2358d; U.S.S.R., 1513c,h, 1562, 2706; control, 1996, 2426, 3082; distribution of mycelium in, 3414; effect of crop rotation on, 110; of, on cells of, 1561; on respiration of, 601; factors affecting, 980, 1513h, 1562, 3082, 3415; immunity from, 3386, 3387; N metabolism and var. susceptibility to, 1997; (?)premunity in, 1563; var. react. to, 236e, 979, 3415.
— virus disease, new, in Bulgaria, 977.
—, wheat striate mosaic virus on, in U.S.S.R., transmission of, by vectors, 1559.
*—, *Xanthomonas maydis* on, in India, 1863.
Malachite green against *Phytophthora* on cacao, 1519c.
— — as seed treatment for maize, 1996, 2426; watermelon, 2149; wheat, 2683.
— — ineffective as soil treatment against *Phytophthora* on cacao, 1519b.
— — versus Cu, 1519c.
Malathion, degradation of, by *Pseudomonas* and *Trichoderma viride*, 891.
Maleic hydrazide against *Alternaria tenuis* on tobacco, 3199.
— —, effect of, on development of *Claviceps purpurea*, 1897; on *Puccinia graminis* on wheat and *P. hordei* on barley, 937, 1543; on *P. recondita* on wheat, 1543; on *Verticillium alboatrum* on tomato, 3570.
Mal pur against *Coryneum foliicola* on apple, 1291.
Malpighia glabra, *Cercospora bunchosiae* on, in Hawaii, 393.
Malus canker in U.S.A., fungi and microorganisms associated with, 2041.
—, *Venturia inaequalis* on, genetics of, var. and sp. react. to, 2059.
— *platycarpa*, tobacco mosaic virus on, transmission of, by seed, 2258.
[*Malus*] *pumila*, see Apple.
Malustela aeria in soil, 889.
*— — on tomato, 434.
Malva vein clearing virus on *Lavatera arborea*, 1502.
— yellows virus, differentiation of turnip mild yellows virus from, 2592i.
Malvaceae, *Malva* vein clearing virus can infect, 1502.
Malvastrum coromandelium yellow vein mosaic virus in India, hosts of, (?)str. of *Abutilon* mosaic virus, transmission of, by vectors, 76.
Mancozeb against *Colletotrichum tabacum* on tobacco, 2825; *Griphosphaeria nivalis* on wheat, 89; *Leptosphaeria nodorum* on wheat, 89; *Phytophthora infestans* on potato, 230k, 2800, 3176; as seed treatment for beet, 787.
—, effect of, on bolting of beet, 2872.
— versus thiram, 2825.
— in combination against *Podosphaera leucotricha*, 374; *Venturia inaequalis*, 2263, 3129; *Verticillium malthousei* on mushroom, 3306.
— — — injury to apple, 3129.
Mandarin orange, see Orange.
Maneb against *Alternaria chrysanthemi* on *Chrysanthemum maximum*, 343; *A. solani* on potato, 1077; *Cercospora beticola*, 2873, 3265, 3266; *Colletotrichum phomoides* on *Capsicum*, 1831; *Gibberella zeae* on maize and wheat, 90; *Glomerella cingulata* on mango, 394; *Griphosphaeria nivalis* and *Leptosphaeria nodorum* on wheat, 89; *Marssonina* on poplar, 162b, 451; *Oospora pustulans* on potato, 3629e, *Ovulinia azaleae* on *Rhododendron*, 2036; *Peronospora tabacina*, 1329, 1735, 2520; *Phytophthora infestans*, 2369b, 2800; plant diseases, 1176d; *Puccinia pelargonii-zonalis* on *Pelargonium*, 1620; *Pyrenophora graminea* on barley, 89; *P. teres* on barley, 962; root rot of cotton, 2026; *Ustilago avenae*, 89; *Venturia inaequalis*, 1032c, 1176f; as corm treatment for *Gladiolus*, 651; as seed treatment for beet, 787; for flax, 638.
—, effect of O and water on decomposition of, 857; of, on *Alternaria solani* on tomato, 13e; on pollen germination and fruit yield of cranberry, 1669.
— versus daconil-2787, 2369b.
— in combination against *Alternaria dauci* and *Erysiphe umbelliferarum* on carrot, 493; *Monilia roreri* on cacao, 2599e; *Plasmopara viticola*, 2155; *Podosphaera leucotricha*, 374; *Puccinia graminis* and *P. recondita* on wheat, 2682; *Sclerotinia fuckeliana* on vine, 2155; *Septoria apiicola*, 2913; *Uncinula necator*, 2155; *Verticillium malthousei* on mushroom, 3306.
— analogue against *Peronospora tabacina*, 2520.
Manganese as seed treatment for cotton, 2738; for melon, 501a.
— deficiency in avocado pear, 3149; broccoli and cauliflower, 3592; strawberry, 3145.
—, effect of, on *Verticillium* on cotton, 633, 3453.
— toxicity in apple, cauliflower, potato, and wheat, 1911.
— acid sulphate as seed treatment for beet, 2556.
— dithiocarbamate against *Alternaria senecionis* on *Senecio cruentus*, 2244.
— ethylene bisdithiocarbamate against *Puccinia recondita* on wheat, 945.

[Manganese] sulphate as seed treatment for cotton, 2031, 2237; for wheat, 2416, 2683.
— —, effect of, on *Streptomyces scabies* on potato, 722.
Mango (*Mangifera indica*), *Aspergillus niger* on, effect of, on ascorbic acid content, 3518.
—, *Botryodiplodia theobromae* on, 1853, 3517; effect of temp. on, 1054.
—, *Ceratocystis fimbriata* on, in Brazil, aetiology of, transmission of by (?)*Hypocryphalus mangiferae*, 2080.
—, *Corticum solani* on, control, 1860.
—, *Erwinia mangiferae* on, in Pakistan, identification and symptoms of, 3150.
—, *Glomerella cingulata* on, control, 394; designated *Colletotrichum gloeosporioides* var. *minor*, 370; effect of on ascorbic acid content, 3518.
— malformation, *Gibberella fujikuroi* associated with, 2786.
*— *Phomopsis amraii* on, in India, 2079.
—, *Stemphylium* on, 860.
Manihot utilissima, see Cassava.
Manila hemp, see *Musa textilis*.
Manure, green, effect of on fungi on plants, 2667.
Manzate against *Cercospora nicotianae* on tobacco, 2512; *Stemphylium solani* on tomato, 1740.
— D against melon diseases, 1819.
— — in combination against *Erysiphe cichoracearum* and *Pseudoperonospora cubensis* on squash, 3300.
Maple, see *Acer*.
**Marasmiellus scandens* on coffee and orange, 2358d.
Marasmius candidus on *Liquidambar styraciflua* forming mycorrhiza, 1891.
— *palmivorus* on oil palm, 2297, 3535, 3536.
Maravalia pterocarpi, *Scopellopsis dalbergiae* distinct from, 2320.
Marigold, see *Calendula officinalis*.
Marrow, see Vegetable marrow.
Marssonina brunnea on poplar, see Poplar.
— *populi-nigrae* on poplar, 162a, 2108.
— *salicicola* on *Salix*, 440, 2108.
Marzin against *Peronospora tabacina*, 2520.
**Mastigosporium album* on *Lolium perenne*, 2759.
Matricaria inodora, *Verticillium alboatrum* and *V. dahliae* on, 84.
Matthiola incana, *Leptosphaeria maculans* on, in U.S.S.R., 643.
MBC-33 as soil disinfectant, effect of, on actinomycetes and bacteria, 888.
MC 1053 and MC 1143 against *Podosphaera leucotricha*, 1650, 2459.
M-combi against *Podosphaera leucotricha*, 374.
Medicago polymorpha, lucerne mosaic virus on, in Queensland, 1238.
— *sativa*, see Lucerne.
Melampsora allii-populina on poplar, 1337, 1343.
— *larici-populina* on poplar, 162a, 1343, 3221.
— *lini* on flax, 130, 2239.
— — on linseed, 2790.
Melampsorella caryophyllacearum on *Abies*, 453.
Melanospora parasitica on *Amphinallon solstitiale*, *Beauveria bassiana*, and Coleoptera in U.S.S.R., 2170.
Melilotus alba, red clover mottle virus can infect, 141.
[*Melilotus*] *indicus*, *Robinia pseudoacacia* mosaic virus on, 2844.
Meliola subdentata var. *microspora* on *Sansevieria liberica*, 641.
Meloidogyne associated with *Fusarium oxysporum* f.sp. *nicotianae* on tobacco, 2312a.
— *incognita acrita*, effect of on infestation of tomato by *Pseudomonas solanacearum*, 157
— — — + *Cochliobolus victoriae* on oats, 3078.
— *javanica* associated with *Ozonium texanum* var. *parasiticum* on eggplant, 1826.
Melon (*Cucumis melo*), *Alternaria cucumerina* on, in U.S.A., 1819.
—, *Colletotrichum lagenarium* on, comparative ornithine metabolism in healthy and infected seedlings of, 1820; metabolic changes induced by, 1166; sugar metabolism in, 3298.
—, cucumber mosaic virus on, in France, 50 2596; breeding against, 509; plastic films a soil cover against, 2148.
—, — ring spot virus on, in France, differen from previous ring spot virus on cucumber transmission of by vectors, 1492m.
—, *Erysiphe* on, in France, 2596.
—, — *cichoracearum* on, in France, 509 U.S.A., 1819; breeding against, 214, 509 control, 838, 1819; inheritance of resistance in, 3299.
—, — — f.sp. *cucurbitae* on melon, control 820.
—, — *polygoni* on, control, 2369b.
—, fungi on, control, 501a, b.
—, *Fusarium* on, control, and effect of manuring and soil warming on, 822.
—, — *oxysporum* on, 1821; in U.S.S.R. 1513v, 2579; factors affecting, 2579.
—, — — f.sp. *melonis* on, in France, 234, 509 2596; breeding against, 234, 509; factors affecting, 2921; var. react. to, 1397; water metabolism in, 823.
—, — *semitectum* and *F. solani* on, 1821.
— necrotic spot virus on muskmelon in Japan, similarity of to wild cucumber mosaic virus, transmission of by seed, 213.
—, *Oidium* on, spore liberation in, 2580.
—, *Pseudoperonospora cubensis* on, in Gabon 1941; U.S.S.R., 1224.
—, *Pyrenochaeta lycopersici* on, in France 2596.
—, *Sphaerotheca fuliginea* on, in W. Australia 3301; breeding against, 214; spread, symptoms, and var. react. to, 3301.
— spotted necrosis virus, purification of, 11h
—, *Verticillium dahliae* on, in U.S.S.R., 257
Melprex against *Blumeriella jaapii* on cherry 1045; *Venturia inaequalis*, 1176f.
— ineffective against *Pseudomonas syringae* on cherry, 1045.
Mentha, *Erysiphe cichoracearum*, *E. polygoni* and *Puccinia menthae* on, in Argentina, 303
— *cardiaca*, *Puccinia menthae* on, epiphytology of, 2084.
— *piperita*, see Peppermint.
— *spicata*, *Puccinia menthae* on, epiphytology of, 2084.
Mercuran against *Ascochyta fabae* on broad bean, 2891; *A. pisi* on pea, 477; *Tilletia caries* 2688; as seed treatment for barley, 96 2697; for broad bean, 2561; for maize, 60
— in combination against *Tilletia caries*, 268
Mercurate against *Cercospora beticola*, 2873.
Mercuric chloride as soil disinfectant, 1695.

Mercurous chloride as soil disinfectant, 550a.
Mercury as seed treatment for cotton, 129.
—, effect of on *Gloeosporium alborubrum* on *Hevea* rubber, 1090b.
— in combination against *Venturia inaequalis*, 1289.
— residues in apple, factors affecting, 2462.
— compounds as seed treatment for cereals, 1176c; for pumpkin, 1824.
— —, organic, against *Ascochyta pisi*, 477; *Cercospora beticola*, 182; *Corticium solani* on potato, 1176h; *Griphosphaeria nivalis* and *Leptosphaeria nodorum* on wheat, 89; *Marasmius palmivorus* on oil palm, 2297; *Ovulinia azaleae* on *Rhododendron*, 2036; *Phoma foveata* on potato, 3548; *Pleospora bjoerlingii* on beet, 182; *Pyrenophora graminea* on barley, 89; *Pyricularia oryzae*, 3423a; *Pythium ultimum* on beet, 182; soil fungi, 861; *Streptomyces scabies* on potato, 1176h; *Ustilago avenae* on oats, 89; as seed treatment for beet, 787; as timber preservatives, 3251.
— —, —, inhibition of *Curvularia eragrostidis*, *Ganoderma zonatum*, and *Marasmius palmivorus* by, 3536.
— —, —, toxicity of to beet, 787.
— —, —, in combination against *Gibberella fujikuroi* var. *subglutinans* on pineapple, 2787.
— diphenyl preparation in combination against *Taphrina deformans* on peach, 2777.
— oxide, constituent of santar 'A,' 1718a.
Mercutal against *Venturia inaequalis*, 1032d,e.
Merfazin, see Phenyl mercuric chloride.
Meria laricis on larch, 18491.
— — on trees, 749.
Merulius lacrymans, see *Serpula lacrimans*.
Metals, corrosion products of, effect of, on micro-organisms, 3337c.
Metapolophium dirhodum transmitting barley yellow dwarf virus, 3395.
Metarrhizium anisopliae, culture of, 1425.
— — on *Oryctes rhinoceros* in S.E. Asia, 1192.
Methanol as seed treatment for barley, 3068.
—, toxicity of, to barley, 3069.
L-Methionine, effect of, on *Aphanomyces cochlioides* on beet, 1784c.
Methoxyethyl mercuric silicate against *Gibberella zeae* on maize and wheat, 90; as seed treatment for flax, 638.
Methuen handbook of colour, revised 2nd edition of, 3320.
Methyl alcohol as seed treatment for barley, 3408.
DL-β-methylaspartic acid against *Aphanomyces euteiches* on pea, 1792.
Methyl bromide against *Armillaria mellea* on oak, 2838; as soil treatment, 165, 888.
— —, effect of, on actinomycetes and bacteria in soil, 888.
— cellulose, decomposition of, by soil fungi, 551.
Methylene blue against *Urocystis cepulae* on onion, 2668.
Methylenedioxybenzenes, toxicity of, 1435.
Methylisothiocyanate, effect of ammonium humate on release of, from fungicide treated soil, 2968.
Methylmercuric dicyandiamide as bulb treatment for *Narcissus*, 3466; as seed treatment for flax, 638.
2-methyl-2-(methylthio) propionaldehyde *o*-(methylcarbamoyl) oxime, see Temik.
3-methyl pyrazole derivatives against *Colletotrichum lagenarium* on cucumber, *Corticium sasakii*, *Pyricularia oryzae*, and *Xanthomonas oryzae* on rice, 29a.
2-methylthio-6-azauracil, uptake and metabolism of, by roots of bean and wheat, 3331.
Methyl zineb against *Peronospora tabacina*, 2519.
Mezineb against *Griphosphaeria nivalis* and *Leptosphaeria nodorum* on wheat, 89.
Microbiology, Agricultural, book on, 1411.
—, Annual Review of, 239.
—, Developments in Industrial, 3337.
—, Introduction to, textbook on, 1412.
—, Laboratory methods in, book on, 2363.
Microenvironment chamber for critical control of R.H., 106.
Microsphaera alphitoides on oak, 1337.
— *diffusa*, ontogeny of ascocarp of, 560.
— *hypophylla* f.sp. *kazachstanica*, synonym of *M. hypophylla*, 448.
— *lonicerae* on *Lonicera tartarica*, 3335.
— *penicillata* on chestnut, 1337.
— *polonica* on *Hydrangea*, 654.
Microstroma juglandis on walnut, 1337.
Miedzian, see Copper oxychloride.
Milk against lettuce mosaic virus on lettuce, 1390; virus infections in vegetables, 278.
— for disinfecting hands and knives against virus diseases, 278.
—, skimmed, effect of, on cucumber green mottle mosaic virus, potato virus X, and tobacco mosaic virus on cucumber and tomato, 914.
Millets, Bibliography of World literature covering the years 1930–1963, 3088.
Miltox against *Alternaria porri* on onion, 206; *Mycosphaerella melonis* on cucurbits, 826.
—, constituents of, 835.
Mites, detection of wheat viruses in, 2161b.
— transmitting wheat streak mosaic virus, 1231a, 1525; wheat striate mosaic virus, 1559.
Mobilcer M, use of, on *Hevea* rubber, 1089e.
Modolog N in combination against *Aureobasidium pullulans* and *Ceratocystis* on timber, 2548.
Molybdate in combination against *Ascochyta fabae* on broad bean and *A. rabiei* on *Cicer arietinum*, 2891.
Molybdenum deficiency in maize, 986; vine, 2931d.
—, effect of, on formation of coenoses of microbial antagonists to *Verticillium dahliae* on cotton, 633; on *Verticillium* on cotton, 2737, 3453.
— salt, effect of, on *Puccinia graminis* on wheat, 3049.
Monacrosporium bembicodes and *M. doedycoides*, vitamin requirements of, 3326.
**Monarda didyma*, *Phyllosticta monardicola* on, in Czechoslovakia, 1011.
Monilia roreri on cacao, 2599e, 2671.
Moniliales in *Eucalyptus regnans* leaf litter, 161.
Moniliopsis aderholdii on cabbage, 1877.
— — on cucumber, 1849q.
Monilochaetes infuscans on sweet potato, 726, 1087.
Monochaetia indica on loquat, 1456a,b.
Morestan against *Erysiphe cichoracearum* on tobacco, 2311; *Podosphaera leucotricha*, 1650, 3492; *Sphaerotheca fuliginea* on Cucurbitaceae, 3301; *S. humuli* on strawberry, but not yet permitted, 2781.

[Morestan] versus dinocap, 2311.
— in combination against *Alternaria dauci* and *Erysiphe umbelliferarum* on carrot, 493.
Morocide against *Podosphaera leucotricha*, 1650, 3492; *Sphaerotheca fuliginea* on Cucurbitaceae, 3301.
Morpholine against *Ctenomyces* and soil micro-organisms on woollen textiles, 3658.
Morus, see Mulberry.
Mucor griseo-cyanus, effect of, on growth of tomato, 2106.
— *plumbeus* and *M. racemosus*, reaction of to exposure to 10 atmospheres of O, 248.
— *racemosus* on packing material, 1370.
Mucorales, chondriome in, 1852.
—, effect of temp. on growth of, 1443.
—, in Latvian SSR., 1849m.
— on *Eucalyptus regnans* leaf litter, 161.
Mulberry (*Morus*), fig mosaic virus on, 756.
*—, *Fusarium solani* on, in U.S.A., symptoms of, 3218.
—, *Helicobasidium mompa* on, control and factors affecting, 3127.
— mosaic virus on mulberry, effect of temp. on appearance of symptoms of, 446; strs. of, 3216; transmission of by vectors, 755.
—, *Phomopsis mori* on, in U.S.S.R., *Diaporthe tetrastaga* f.sp. *mori* ascigerous state of, 1749.
—, *Phyllactinia suffulta* on, in U.S.S.R., 1112.
*—, *Pseudomonas mori* on, in India, *1863, *3510; morphology and symptoms of, 3510.
—, *Rosellinia necatrix* on, control and factors affecting, 3127.
—, *Steganosporium sirakoffi* on, in U.S.S.R., 3217.
Musa nana, see Banana.
— *paradisiaca* var. *sapientum*, see Banana.
— *textilis* mosaic virus on maize, 131.
— — — — on *M. textilis* in the Philippines, association of aphids with, 1600; propagation of virus-free suckers of, 2437; transmission of, by vectors, 2436; mechanically, 131.
Mushroom (*Agaricus*), *Diehliomyces microporus* on, in Italy, 2928.
— diseases, bacterial, 1175f.
—, glossary of terms relevant to, in 5 languages, 2929.
— growing, books on, 220, 3304.
— mummy disease, *Pseudomonas* near *P. tolaasii* isolated from, 3634o.
—, *Myceliophthora lutea* on, in New S. Wales, 2357g.
—, *Mycogone* on, control, 2928.
—, new atlas of, Romagnesi, vol. 4, 3690.
—, products of aerobic and anaerobic metabolism in, 222.
—, propagation of by tissue culture, 1173.
*—, *Scopulariopsis fimicola* on, in New S. Wales, 2357g.
—, stimulation of yield in, by vegetable oils, 3618.
—, storage of, factors affecting, 221.
—, synthesis of urea in, 2613a,b.
—, technique for sterilizing media for culturing, 2151.
—, *Verticillium* on, control, 2928.
—, — *malthousei* on, biology and morphology of, 3306.
— virus diseases, 2928; effect of cultural treatments on, 3305; epidemiology of, 2930; genetics of, 2928; study on, 2928, 2930.
Mushrooms and other fungi, book on, 268.
Muskmelon, see Melon.
*Mussaenda frondosa, Glomerella cingulata on, in India, symptoms of, 1617.
Mustard (*Brassica alba* and *B. nigra*), *Plasmodiophora brassicae* on, ultrastructure study on host-parasite relations of, 3256.
*—, *Sclerotium rolfsii* on, in India, 2669.
—, yellow (*Brassica sinapis*), *Alternaria brassicae* on, production of toxin by, 1774.
Myceliophthora lutea on mushroom, 2357g.
Mycelium radicis atrovirens, effect of *Aphelenchoides* on growth of, 2980.
Mycena citricolor on coffee, 1583, 2729.
Mycobacterium, reclassification of, 519.
Mycocoenology, problems of, 1849g.
Mycoflora and principal fungus diseases of fruit and berry plants in south of the Soviet Far East, 19.
Mycogone cervina, decomposition of methyl cellulose by, 551.
Mycological research, developments in, in Rumania, 841.
Mycology, Abstracts of, monthly publication on, 2359.
—, English-Latin glossary of, 264.
—, industrial, trends and problems in contemporary, 33.
— and plant pathology, soil water terminology in, 52.
Mycorrhiza, history of study of, 1438.
—, nematode on, in New Mexico, 2847d.
— of *Abies pindrow*, 1440.
— of *A. religiosa*, 37.
— of *Agathis australis*, 2379.
— of beech, 1206, 1889.
— of *Coprosma robusta*, 2380.
— of *Dactylorchis purpurella*, 2983.
— of deodar, 1440.
— of forest trees, 1204.
— of grasses, 3661.
— of *Griselinia littoralis*, 2380.
— of *Liquidambar styraciflua*, 1891, 1892.
— of *Liriodendron tulipifera*, 1892.
— of oak, 37, 40.
— of orchid, 2381; physiology and ecology of, 244.
— of pine, see Pine.
— of *Pittosporum tenuifolium*, 2380.
— of *Podocarpus*, 1843c.
— of poplar, 40.
— of *Pseudotsuga menziesii*, 2981.
— of spruce, see Spruce.
— of tomato, 2592s.
— of wheat, 1843b.
—, technique for culturing mycelia from, 120
Mycosphaerella, nomenclature of, 3697b.
— *aleuritidis* on *Aleurites fordii*, 701.
— *arachidicola* on *Arachis*, 2904.
— — on groundnut, see Groundnut.
— — renamed *M. arachidis*, 3357.
— *arachidis* on groundnut, 3357.
— *berkeleyi* on groundnut, see Groundnut.
— *citrullina*, see *M. melonis*.
— *cucumis*, see *M. melonis*.
— *fragariae* on strawberry, 1050, 2074, 2478.
— *ligulicola* on *Chrysanthemum*, 341, 91 3631.
— *melonis* on cucumber, 825.
— — on cucurbits and watermelon, 826.
— *musae* on banana, 1674.
— *musicola*, effect of drying on viability of germinated spores of, 3339.
— — on banana, see Banana.
*— *nigro-maculans* on cranberry, 3384.

[ycosphaerella] persica on peach, 3357.
personata, perfect state of *Cercospora vitis*, 2935.
pinicola on pine, 1745d.
pinodes on clover and lucerne, 2879.
— on pea, see Pea.
—, perfect state of *Ascochyta pinodes*, 1144a.
pruni-persicae on peach, 3357.
– *ribis* on currants, 3142.
sentina on pear, 684.
woronovii, description and synonymy of, 3697c.
ylone as soil disinfectant, 2599g.
yristica fragans, see Nutmeg.
Myrothecium indicum on rice, 1575.
roridum on eggplant, 2927.
– — on tomato, 434.
— on *Vinca rosea*, 2449.
verrucaria, carbon and nitrogen nutrition of, 3664.
– — on rice, 2016.
Mystrosporium adustam on *Iris*, 4f.
Myzus cerasi and *M. lathyri* transmitting cucumber mosaic virus, 2204.
persicae, analysis of vector ability for transmitting pea enation mosaic virus and potato leaf roll virus, 75a,b.
— not transmitting celery latent virus, 1162; hop virus, 397.
— transmitting bean common mosaic virus, 482; bean yellow mosaic virus, 2138; beet western yellows virus, 3262; beet yellows virus, 471, 2553; celery mosaic virus, 1811; cucumber mosaic virus, 281, 1014, 1500, 1823, 2925; cucumber ring spot virus, 1492m; lettuce mosaic virus, 1390; lucerne mosaic virus strs., 281; maize dwarf mosaic virus, 3081; mulberry mosaic virus, 755; papaw mosaic virus, 832; parsnip mosaic virus, 3311h; pea enation mosaic virus, 1143; pea leaf roll virus, 1789; pea mosaic virus, 2876; *Physalis floridana* vein blotch virus, 284; potato leaf roll virus, 403, 2799; potato virus, 1073; potato virus M, 1503; potato virus Y, 2926; *Ranunculus* mottle virus, 2044; rhubarb virus, 2161l; *Robinia* mosaic virus, 1346; turnip mosaic virus, 3302; *Tylophora* mosaic virus, 3532; *Valerian* ring mosaic virus, 3162; watermelon mosaic virus, 818.

NAA against *Cercospora coffeicola* on coffee, 2023b.
-6 benzyladenine, effect of, on tomato spotted wilt virus on *Nicotiana rustica* and *Petunia*, 3704.
abam against *Phytophthora capsici* on *Capsicum*, 829.
- injury to holly, 653.
–, recommended analytical methods for, 856.
Naemacyclus niveus on Coniferae, 1351.
Naemospora strobi on pine, 1126.
Naphthaleneacetamide against *Verticillium albo-atrum* on tomato, 3570.
Narcissus, *Alternaria* on, control, 1602.
–, *Arabis* mosaic virus on, 1278.
–, *Botrytis* on, control, 1602.
–, cucumber mosaic virus on, in the Scilly Isles, 1278.
–, *Fusarium oxysporum* on, control, 1602.
–, — — f.sp. *narcissi* on, control, 3466.
– mosaic virus on *Narcissus*, 1175g, 1278; comparison of, with potato virus X, 3380; electron microscope and X-ray diffraction studies of, 3380.
[*Narcissus*], *Narcissus* yellow stripe, strawberry latent ring spot, tobacco rattle, and tomato black ring viruses on, 1278.
NC 918 against *Hemileia vastatrix* on coffee, 2728.
NC 1584 against *Glomerella cingulata* on coffee, 1267b.
N-cetylpyridine dichloride against fungi on packing material, 1370.
— — — versus GIPKH-34, 1370.
N-dimethyl-amino succinamic acid, see Alar.
Nectria cucurbitula var. *macrospora*, *Cylindrocarpon* on *Abies balsamea* (?)imperfect state of, 765.
— *fuckeliana* on *Abies amabilis*, *A. grandis*, and pine, 158f.
— *galligena*, associated with *Acer saccharum* sunscald canker, 3634m.
— — on apple, see Apple.
— — on aspen, 2531.
— — on pear, 3497.
— *haematococca*, *Fusarium solani* state of, 1745b.
— *radicicola* in rhizosphere of bean, 2562.
— —, inhibition of, by garlic root extracts, 810.
— — on oats, 2160c.
— —, production of nectrolide by, 2992.
Nectarine (*Prunus persica*), *Stereum purpureum* on, effect of pruning on, 3504.
Nectrolide, chemical and physical properties of identical with brefeldin A, 2992; effect of on *Eucalyptus pilularis*, 2992; production of by *Nectria radicicola*, 2992.
Nematodes, associated with fungi on banana roots, 1053.
—, fungi imperfecti on, in Finland, 3649.
—, host specificity in predacious fungi on, 1190.
— transmitting virus diseases, 1236, 1498; of currants, 2282.
Nematospora coryli on soybean, 1804.
Nemex as soil disinfectant, 156.
Neocosmospora africana in soil, 889.
Neomycin B, effect of, on phytopathogenic bacteria, 2609.
Neosphrosyne orientalis transmitting Leguminosae witches' broom virus, 724; soybean rosette virus, 235c.
Neovossia indica, teliospore morphology of, 68.
Nephotettix transmitting rice tungro and yellow dwarf viruses, 3091.
— *apicalis* transmitting rice ' dwarfing ' virus, 2200.
— *bipunctatus* transmitting rice virus diseases in India, 2222.
— *impicticeps* transmitting rice tungro virus, non-persistent in, 993.
— *lugens* transmitting rice rosette virus, 2712.
**Nerine angustifolia*, *Stagonospora curtisii* on, in England, 658.
— *bowdenii*, *Stagonospora curtisii* on, in *England, 658; Germany, 1618.
Nerium oleander, see Oleander.
Neurospora crassa, arginine biosynthesis in, 2593a.
— —, binding and uptake of dodine acetate by condidia of, 855.
— —, electron microscopy of captan-treated conidia of, 2969.
— —, genetic control of glyoxylate cycle in, 2593a.
— —, hybrid proteins in, 2593a.

Nicandra physaloides, potato virus N on, differentiation of potato virus NR symptoms from, 1313.
Nickel chloride against *Exobasidium vaccinii* on *Vaccinium angustifolium*, 2600e; *E. vexans* on tea, 1720, 3191.
— dimethyldithiocarbamate against *Xanthomonas oryzae* on rice, 235k.
— nitrate against *E. vaccinii* on *V. angustifolium*, 2600e, *Uromyces viciae-fabae* on lentil, 205.
— sulphate against *E. vaccinii* on *V. angustifolium*, 2600e.
— — in combination against *Puccinia graminis* and *P. recondita* on wheat, 2682.
Nicotiana, *Anthurium andraeanum* virus on, transmission of by sap, 1854c.
—, *Corynebacterium fascians* can infect, 1102.
—, groundnut ringspot virus can infect, 1389a.
—, *Peronospora tabacina* on, necrotrophic reaction induced by, 2515; opt. temp. for spread of, 1850b.
—, tobacco mosaic virus on, effect of temp. on hypersensitive reaction to, 1097b.
—, — — — str. pp on, symptoms of, 3540.
—, stolbur virus can infect, 1492k.
— *clevelandii*, groundnut rosette virus can infect, 805.
— —, hop mosaic virus on, 2291.
— —, pea early browning virus on, symptomatological difference between variants of, 3025.
— —, vine fanleaf virus can infect, 3624.
— *debneyi*, *Peronospora tabacina* on, 2513.
— *glauca*, stolbur virus on, symptomless carrier of, 1492k.
— *glutinosa*, apple stem grooving virus can infect, 3488.
— — as indicator for poplar mosaic virus, 77; for tobacco mosaic virus, 3194.
— —, cucumber mosaic virus str. Y on, electron microscope study of ultrastructure of infected leaves of, 910.
— —, *Datura* virus can infect, 1239.
— —, lettuce necrotic yellows virus on, factors affecting local lesion response to, 1939; localization and recovery of, from xylem tissues, 497.
— —, potato virus N on, differentiation of potato virus NR symptoms from, 1313.
— —, — — X on, electron microscope study of, 911; preventive effect of inhibitors from leaves of, on, 146.
— —, — witches' broom virus on, effect of hydrocortisone on transmission of to tomato, 1240.
— —, rhubarb virus can infect, 2161l.
— —, tobacco mosaic virus on, effect of active and UV irradiated strs. of on, 2663; of rooting on multiplication and symptom expression of detached leaves of, 3372; of salt-soluble protein fractions of on infectivity of, 2821; electron microscope study of, 911; inhibition of by anthocyanins from *Viola tricolor* var. *hortensis*, 1938; by juice from *Chenopodium album*, 2664; phenolase activity in, 2207.
— —, — — — orchid str. on, lesions induced by, 2206.
— —, tomato spotted wilt virus on, 1854d.
— *langsdorffii*, *Datura* virus can infect, 1239.
— *megalosiphon* as indicator for poplar mosaic virus, 77.
[*Nicotiana megalosiphon*], cherry leaf roll vi on, maintenance of, 692.
— *plumbaginifolia*, *Phytophthora nicotianae* v *parasitica* not infecting, 2945d.
— *rustica*, *Erysiphe cichoracearum* on, in In resistance to, 1178b.
— —, groundnut rosette virus can infect, 3
— —, lucerne mosaic virus on, effect of te on respiration of, 2369o.
— —, *Peronospora tabacina* on, var. react. 428b.
— —, potato virus NR on, comparison with potato virus N, 1313.
— —, — yellow dwarf virus on, fine struc and intracellular localization of, 411.
— —, tomato spotted wilt virus on, effect N-6 benzyladenine on, 3704.
— *sylvestris*, tobacco mosaic virus tomat on, in Japan, 154.
— *tabacum*, see Tobacco.
Nigrospora sphaerica on beet seed, 786.
Nitrafen against *Sphaerotheca mors-uva* gooseberry, 697; *Venturia pirina* on pe 2061; as soil disinfectant, 3515.
Nitragin as seed treatment for pea, 187.
Nitrite, effect of, on fungi on pine and spr 2863.
—, inhibition of *Fomes annosus* on pine a spruce by, 2863.
Nitrogen, absorption of, by mycorrhi roots of beech, 1206.
—, content of, in *Phytophthora infestans* fected and healthy potato, 573g.
— deficiency in avocado pear, 3149; cocon 3389; strawberry, 3145; tomato, 2592s; vi 2931a.
—, effect of, on *Colletotrichum lindemuthian* on *Phaseolus*, 2341; on growth of gr point galls in cacao, 2599f; on *Macrophom phaseoli* on tobacco, 2385b; *Monochae indica* on loquat, 1456b; *Pestalotia theae* tea, 1456b; on susceptibility of *Chrysant mum* to *Fusarium oxysporum*, 1017; timber decay, 1368a,b.
— nutrition of eggplant in relation to *Verti lium dahliae*, 502.
—, role of, in timber decay, 780.
—, selective assimilation of by *Poria we* 2119.
— toxicity in vine, 2931a.
— in combination, effect of, on *Xanthomo vesicatoria* on *Capsicum*, 1832.
— compounds, content of in *Phytophth infestans* infected and healthy potato, 57
n-nitrophenol as seed treatment for ma 1996, 2426; for wheat, 2683.
o-nitrophenol against *Urocystis cepulae* onion, 2668; *Ustilago avenae* on oats, 2 as seed treatment for watermelon, 2 wheat, 2683.
— in combination as seed treatment for ma 2426.
NIUIF–1 as seed treatment for maize, 605.
— versus NIUIF–2 as seed treatment cucurbits, 2923.
N-methyl-N′-nitro-N-nitrosoguanidine, use to induce mutation in *Pyricularia ory* 2716.
Nobiletin, effect of on *Deuterophoma trac phila* on orange, 2721.
Nocardia vaccinii on *Vaccinium*, 1046.
Nodulosphaeria araucariae on *Araucaria bra liana* needles, 2325.

rthern cereal mosaic virus in Japan, properies of, resemblance of to oat pseudorosette virus, 2675.
— — virus on barley and oats, 2675.
ovozir-N against *Lophodermium pinastri* on pine, 1758; *Peronospora tabacina*, 3198; *Puccinia graminis*, *P. recondita*, and *P. striiformis* on wheat, 3046.
-N50 against *Lophodermium pinastri* on pine, 1758; *Puccinia graminis*, *P. recondita*, and *P. striiformis* on wheat, 3046.
utmeg (*Myristica fragrans*), *Colletotrichum* on, fungus morphology and symptoms of, 2791.
-, *Corticium salmonicolor* on, in Sarawak, 2358d.
ystatin against *Ascochyta pisi* on pea, 1146; *Microsphaera lonicerae* on *Lonicera tartarica*, 3335; *Sphaerotheca mors-uvae* on gooseberry, 3335; as seed treatment for wheat, 2683.
, effect of, on growth of *Botrytis*, 256; of *Pythium aphanidermatum*, 2180.
, inhibition of growth of *Colletotrichum lagenarium* by, 2180.
in combination against *Sclerotinia* on apple, 2460.
sodium salt as seed treatment for cotton, 634.

ak (*Quercus*), *Armillaria mellea* on, research on, 2838.
, *Cenococcum graniforme* on, forming mycorrhiza in Mexico, 37.
, *Ceratocystis fagacearum* on, in U.S.A., 2839; effect of antibiotics and chemicals on, 757; oligomycin on, 2113; serological differentiation of, 1750.
, *Corticium galactinum* on, sp. react. to, 2834.
'drippy nut' disease, *Erwinia quercina* causing, 2323.
-, effect of fungal exudates on root elongation of, 2112.
-, *Erwinia quercina* on, causing 'drippy nut' disease, 2323.
-, *Ganoderma lucidum* on, in U.S.A., 1108.
-, *Inocybe boltoni* var. *ionipes* on, forming mycorrhiza, 40.
-, *Microsphaera alphitoides* on, in U.S.S.R., 1337.
-, — *hypophylla* on, in Europe, *M. hypophylla* f.sp. *kazachstanica* synonym of, 448.
- mosaic and mottle viruses on oak in Europe, 442.
—, *Phlebia atkinsoniana* on, in Canada, 158b.
-, *Pleurotus ostreatus* on, effect of, on open and closed wounds, 3220.
-, *Strumella coryneoidea* on, in U.S.A., *Urnula craterium* perfect state of, 3219.
- virus diseases, transmission of, by grafting, seed, and vectors, 447.
- white spot virus on oak in Europe, 442.
Oats (*Avena* spp.), aster yellows virus on, 1953; in Canada, 3884.
-, barley yellow dwarf virus on, in Denmark, 303; Germany, 1257; U.S.A., 2700; effect of, on quality and yield, 3394; on *Puccinia graminis*, 2702; resistance to, 1550, 2160b; review of, 303; var. react. to, 2160b, 2700.
-, *Bromus* mosaic virus on, 2755; effect of, on *Puccinia graminis*, 2702.
-, *Cercosporella herpotrichoides* on, control, 926, 1542; effect of on yield, 926; first stages of infection by, 1955.
[Oats], *Cochliobolus sativus* can infect, 595.
—, — *victoriae* on, 1554; effect of victorin on respiration of, 308; on ultrastructure of, 307; electron microscope observations on, 306.
—, — — + *Meloidogyne incognita acrita* on, 3078.
—, *Dactylis glomerata* mottle virus on, 1628.
— diseases in Czechoslovakia, resemblance of, to oat sterile dwarf and wheat striate mosaic viruses, transmission of, by *Macrosteles laevis*, 3076; trials of resistant vars. in Argentina, 1954.
—, effect of victorin on, 1553, 2945c.
—, *Erysiphe graminis* on, in U.S.A., 2700; U.S.S.R., 1513e; genetics of, 929; sp. react. to, 2700; var. react. to, 1555.
—, fungi on, isolation of, 1857.
—, *Fusarium avenaceum* and *F. oxysporum* var. *redolens* on, in England, 2160c.
—, *Leptosphaeria avenaria* on, in *Israel, 1516; perithecium development in, 309.
—, maize rough dwarf virus can infect, 1524b.
—, *Meloidogyne incognita acrita* + *Cochliobolus victoriae* on, 3078.
— necrotic mottle virus on oats in Canada, 1523, 2219; hosts of, symptoms of, and mechanical transmission of, 2219.
—, *Nectria radicicola* on, in England, 2160c.
—, northern cereal mosaic virus on, in Japan, 2675.
—, *Ophiobolus graminis* on, 10b, 3043; inhibition of, by substance from roots, 254, 597.
—, *Pseudomonas coronafaciens* on, in U.S.S.R., 2940a.
— pseudo-rosette virus on oats, transmission of, by vectors, 1515.
—, *Puccinia* on, 1245.
—, — *coronata* on, in Canada, 966, 2677; Puerto Rico, 2700; U.S.S.R., 1513d; breeding against, 12r; control, 2161f; evaluation of fungicides against, 1551; factors affecting, 964; uredospore respiration of, 2703; genetics of resistance to, 596, 1552, 2424, 2700; physiologic races of, 965, 966; problems of immunity from, 3386; sp. react. to, 2700; var. react. to, 967, 1550.
—, — *graminis* on, 88c; in Canada, 2677; Puerto Rico, 2700; control, 2161f; effect of barley yellow dwarf and *Bromus* mosaic viruses on, 2702; of, on starch content, 873; factors affecting, 2701, 2702; genetics of resistance to, 596, 968, 969, 2701; physiologic races of, 305, 968; sp. react. to, 2700; var. react. to, 967, 1550.
—, *Pyrenophora avenae* on, control, 2594g; distribution of, 3631; resistance to, 1550.
—, — *teres* on, in Finland, 917.
—, *Rhynchosporium secalis* on, in Finland, 917.
—, soilborne oat mosaic virus on, resistance to, 1550.
— sterile dwarf virus on oats in Finland, 963; *Arrhenatherum elatius* dwarf virus resembling, 2757; control, 963, disease in Czechslovakia resembling, 3076; transmission of by vectors, 963.
—, *Uromyces appendiculatus* on, effect of on respiration, 1462.
—, *Ustilago avenae* on, in New S. Wales, 2357; Poland, 1176c; U.S.S.R., 1513c; chemotaxonomic study on, 1258; control, 89, 1176c, 1992, 2668; development and spore formation of, 970; genetics of, 971, 2704; interaction between growth and infection of,

1992; physiologic characteristics of, 3077; physiologic races of, 971, 2357c, 2704.
[Oats, *Ustilago*] *hordei* on, in U.S.S.R., 1513c; chemo-taxonomic study on, 1258; physiologic characteristics of, 3077.
—, virus diseases in Finland, 3314.
—, wheat streak mosaic virus on, 289.
Odontia bicolor on *Abies balsamea*, 158b.
Odontites rubra, *Coleosporium euphrasiae* on, in Hungary, 1115.
Odontoglossum ring spot virus, electron microscopy of, 5g.
— — — — on *Cymbidium*, 1280.
— — — —, tobacco mosaic virus orchid str. symptoms on *O. grande* similar to, 2206.
— *grande*, tobacco mosaic virus orchid str. on, 2206.
Oidiopsis taurica on tomato, 742.
Oidium arachidis on groundnut, 3607.
*— *begoniae* on *Begonia*, 3693.
— — var. *macrosporum*, effect of fungicides on, 3654.
*— *caricae* on *Carica*, 3693.
— *erysiphoides* f.sp. *zinniae* on *Zinnia elegans*, 3459.
— *heveae* on *Euphorbia hirta* and *Hevea* rubber, 1093.
— *xanthami* proposed as name for *Xanthium strumarium* powdery mildew, 2193.
Oil against *Iris* yellow mosaic virus on *Iris*, 2246; lettuce mosaic virus on lettuce, 1390; plant diseases, 516r.
—, inhibition of beet yellows virus transmission by, 471.
— injury to citrus, 2725.
—, use of, on cherry, 1045.
— in combination against *Cercospora beticola*, 2964; *Guignardia citricarpa*, 2725; *Phytophthora infestans* on potato, 2964; *Pseudopeziza ribis*, 2311, 1665.
— -Bordeaux spray versus zineb, 2311.
— palm (*Elaeis guineensis*), B deficiency in, in Colombia, causing little leaf, 3389.
— —, *Ceratocystis paradoxa* on, associated with oil palm red ring, 3389.
— —, *Curvularia eragrostidis* on, in Malaysia, 3536.
— —, *Fusarium oxysporum* on, in Colombia, 3389.
— —, — — f.sp. *elaeidis* on, in Colombia, 3389; study on, 1065.
— —, *Ganoderma zonatum* on, in Malaysia, 3536.
— —, *Marasmius palmivorus* on, in Malaysia, control, 3535; evaluation of fungicides against, 2297.
— —, *Pestalotia palmarum* on, in Colombia, 3389.
— —, potassium deficiency in, in Colombia, causing orange leaf, 3389.
— — rachis internal browning in Malaysia, 2090.
— — red ring in Colombia, *Ceratocystis paradoxa* associated with, 3389.
— — root disease fungi in Malaysia, 1949.
— —, *Thermomyces ibadanensis* on kernel stacks in Nigeria, effect of temp. on, 1066.
— —, *Thielaviopsis* on, in Colombia, 3389.
— — yellow leaf in Colombia, bad drainage causing, 3389.
— plants, aromatic, bacteria and fungi on, in Rumania, 3525.
Olea europaea, see Olive.
[*Olea*] *welwitschii*, *Alternaria porri* and *A. tenuissima* on, 2529.
Oleander (*Nerium oleander*) disease, symptoms and transmission of, by grafting, 1175i.
Oligomycin, effect of, on *Ceratocystis fagacearum* on oak, 757, 2113.
Olive (*Olea europaea*), *Cycloconium oleaginum* on, in *Egypt, 3520; U.S.A., 1058; U.S.S.R., 2788; control, 1058; defence mechanisms against, 540, 2290; factors affecting, 2788; infection by, 2081; morphological and physiological characters of, 3521; spread and symptoms of, 1058.
—, *Pseudomonas savastanoi* and *Verticillium alboatrum* on, in U.S.A., spread and symptoms of, 1058.
Olpidium not transmitting wheat mosaic virus, 662.
— transmitting lettuce big vein virus, 29[illegible] tobacco necrosis virus, 3311l.
— *brassicae* transmitting satellite virus of tobacco necrosis virus, 2592k; tobacco necrosis virus, 1391; tobacco stunt virus, 3634f.
OM 2424 against *Pythium* on sugarcane, 2[illegible]
— — versus dexon, 2100d.
Omadine against *Curvularia inaequalis* on maize, 2003.
Omite against *Erysiphe polygoni* on bean and *Podosphaera leucotricha* on apple, 862.
Onion (*Allium cepa*), *Alternaria porri* on, control, 206.
—, antibiotic effect of root extracts of *Gliocladium roseum*, 810.
—, *Aspergillus* on stored seed of, 2551.
—, *Botrytis* on, popular account of, 1807.
—, — *allii* on, in Egypt, control, 3292; effect of phytoncides on resistance to, 80f, 4; popular account of, 1807; role of essential oils in resistance to, 1847i; selective media for distinguishing, 3291; symptoms of, 32[illegible]
—, — *cinerea* on, selective media for distinguishing, 3291.
—, — *septospora* on, in Egypt, 3292.
— decay, *Pseudomonas* associated with, 26[illegible]
—, *Fusarium oxysporum* on, effect of crop residues on, 297, 2909.
—, — — f.sp. *cepae* on, mode of entry of, 1809; var. react. to, 1808.
*—, *Helminthosporium allii* on, in New South Wales, 1944.
*—, *Heterosporium allii* var. *cepivorum* on, in Chile, symptoms of, 811.
—, micro-organisms on, role of essential oils in resistance to, 1847i.
— mosaic virus on onion, transmission of, [illegible]
—, *Mucor* and *Pencillium* on stored seed, factors affecting, 2551.
—, *Peronospora destructor* on, in Germany, Poland, 2597; U.S.S.R., 2142; control, 8, 2142; distribution of, 2597; effect of, on yield, 6; physiology of, 812; revised leaflet on, 3289; symptoms of, 2142.
—, *Pseudomonas* on stored seed of, factors affecting, 2551.
—, — *alliicola* on, *Peronospora destructor* associated with, 2911.
*—, — *cepaica* on stored in Canada, 3384.
—, *Puccinia asparagi* on, 3294.
—, *Pyrenochaeta terrestris* on, 155, 209; react. to, 1808.
*—, *Rhizoctonia* on, in Mauritius, 2943b.
—, *Sclerotinia squamosa* on, control, 838.

nion], *Sclerotium cepivorum* on, effect of soil temp. on, 2159i.
, *Urocystis cepulae* on, in *New S. Wales, 1944; Norway, 2573; biology of, 492; control, 2600j, 2668.
- yellow dwarf virus on onion in U.S.S.R., 490; effect of, on seed yield, 490; electron microscopy of, 2908; transmission of, mechanically, 489; var. react. to, 490.
nobrychis, *Ascochyta sojaecola* on, in U.S.S.R. 3600.
- *sativa*, fungi in rhizosphere of, effect of, on germination, 1843f.
- *viciifolia*, *Botrytis cinerea* on, 1641.
- —, fungi on, 1857.
- —, *Fusarium avenaceum* on, effect of, 1641.
- —, *Uromyces onobrychidis* on, effect of, on yield, 3479.
- —, *Verticillium dahliae* on, 2747.
nonis yellow mosaic virus, resemblance of, to turnip yellow mosaic group and serological relationship of to *Dulcamara* mottle virus and potato Andean latent virus, 78.
ospora citri-aurantii, effect of sodium orthophenylphenate on development of, 1195.
- *lactis* f.sp. *parasitica* on tomato, 434.
- *pustulans* in soil, 2096.
- — on potato, 4b, 1316, 3629e.
phiobolus graminis, hosts of, 3043.
- — in soil, 1218, 1907, 1909.
- —, inhibition of by root extracts of clover, maize, and oats, 254.
- — on *Agrostis tenuis*, 1632, 2942.
- — on barley, 2592l.
- — on maize, 3084.
- — on oats, 10b, 597.
- — on turf, 1631.
- — on wheat, see Wheat.
- —, seasonal occurrence of airborne spores of, 2592q.
Ophiostoma imperfectum and *O. pini* on pine 1355.
- *roboris* on birch, 752.
Opium poppy (*Papaver somniferum*), bean yellow mosaic virus on, in Bulgaria, transmission of mechanically and by vectors, to broad bean and *Phaseolus*, 704.
Opuntia virus on *Opuntia*, electron microscopy of, 5g.
- *exaltata* virus, effect of hot water treatment on, 2444.
Orange (*Citrus aurantium*, *C. nobilis*, *C. sinensis*, etc.), *Alternaria citri* on, in Queensland, str. of, 999.
—, — *tenuis* on, physiologic study on, 2233.
—, *Aspergillus* on, 3439.
—, *Cercospora gigantea* on, in U.S.A., 2945h.
—, (?)citrus greening virus on, in Australia (E.), 2357a.
—, — impietratura virus on, in Italy, symptoms of, 613.
—, — infectious variegation virus on, transmission of mechanically to bean, 611.
—, — psorosis virus on, in Cyprus, 2944b.
—, — stem-pitting virus on, in Corsica, transmission of, by seed or vectors, 3431.
—, — xyloporosis virus on, in Italy, symptomless carrier of, 612.
—, *Corticium solani* on, in Surinam, 1578.
—, *Deuterophoma tracheiphila* on, effect of compounds from peel on, 2721.
—, *Diaporthe citri* on, control, 3438.
— dieback in India, similarity of to greening disease virus, 2229.
[Orange], *Diplodia* on, 3498.
—, — *natalensis* on, effect of, on free amino acids, 325.
— disease in Surinam, (?)ectoparasitic fungus causing, 1578.
— 'foveate pitting' in U.S.A., (?)virus causing, 2945g.
— fruit rots, control, 1006.
—, *Fusarium solani* on, in India, 2723.
—, *Geotrichum candidum* on, 876, 877.
—, *Gloeosporium* (?)*foliicolum* on, in Japan and U.S.A., 2945h.
— greening disease, phloem necrosis associated with, 3634h.
—, *Guignardia citricarpa* on, control, 3438.
*—, *Marasmiellus scandens* on, in Sarawak, 2358d.
—, *Oidium* on, in Italy, 615.
—, *Penicillium digitatum* on, control, 1003, 3102; effect of gamma radiation on, 1004; production of pectolytic enzymes by, 1213.
—, — *italicum* on, control, 3102; effect of gamma radiation on, 1004; production of pectolytic enzymes by, 1213.
— 'wart disease' in U.S.A., (?)virus causing, 2945g.
Orchid, *Botrytis* on, in U.S.A., 2945f.
—, *Corticium solani* on forming mycorrhiza, 2381.
—, *Cymbidium* mosaic virus on, 3635b.
— diseases, popular article on control, 2042.
—, *Rhizoctonia* on, forming mycorrhiza, 244.
—, — *repens* on, forming mycorrhiza, 2381.
—, tobacco mosaic virus orchid str. + *Cymbidium* mosaic virus on, separation of, 2206.
— virus diseases, associated with blossom necrotic streak, technique for transmitting, 1619; transmission of, by sap, 1279.
Orchis mascula, *Rhizoctonia* on, mycelia identified as *Thanatephorus orchidicola*, 10e.
Ornamentals, diseases of, in Rumania, 644; Senegal, 576; revised edition of Forsberg's book on, 1601; thermotherapy as means of control, 235j.
—, Erysiphaceae on, in Estonian S.S.R., 1849h.
—, fungi on, in India, 1477; Yugoslavia, 133.
—, *Phytophthora* and *P. cinnamomi* on, 3111.
—, virus diseases of, 2741; in Estonia, 642; Scandinavia, 568; epidemiology of, 2652c; legislation against in Canada, 1886.
Orthocide against *Botrytis fabae* on broad bean, 2889; as corm treatment for *Gladiolus*, 651.
—, effect of, on *Alternaria dianthi*, 3651; on growth of bacteria and fungi, 2965.
—, see also Captan.
— 50 against *Botrytis cinerea* on *Hydrangea*, 1241; *Cercospora nicotianae*, 2512; *Pezicula* on apple, 232c.
— — versus phaltan 50, 232c.
— 50W against *Curvularia inaequalis* on maize, 2003.
— 75 as seed treatment for pea, 3596.
Orthophaltan against *Diplocarpon rosae* on rose, 2750.
—, effect of, on *Botrytis cinerea*, 3651.
Ortho-poudrol against *Botrytis cinerea* on grapes, 3625a.
—, effect of on wine, 3625.
Orthotomicus caelatus transmitting *Ceratocystis* on Coniferae, 2191.
Oryctes rhinoceros, *Metarrhizium anisopliae* on, in S.E. Asia, 1192.

Oryza sativa, see Rice.
Oryzon against *Pyricularia oryzae*, 235k.
Ovularia hordei on barley, 2694.
Ovulinia azaleae on *Rhododendron*, 660, *2036.
Oxalis, *Puccinia sorghi* on, in U.S.A., aecial state of, 3413.
— *stricta*. significance of, as (?)intermediate host of *Puccinia sorghi*, 1994.
Oxathiin as seed treatment for wheat, 948.
— compounds against *Corticium solani* on potato, 2499.
8-oxyquinoline phthalate and sulphate against *Alternaria*, *Botrytis*, and *Fusarium oxysporum* on bulbs and corms, 1602.
Oxytetracycline against *Pseudomonas syringae* on cherry, 1045.
— -HCl, effect of, on sclerotial development and germination of *Claviceps macrocephala* on *Pennisetum typhoideum*, 2709.
Oxythioquinox against *Erysiphe cichoracearum* f.sp. *cucurbitae* on cucumber and melon, 820; *Podosphaera leucotricha* on pear, 2270.
— injury to pear, 2270.
*Ozone injury to celery, 1163; tobacco, 153.
Ozonium texanum var. *parasiticum* on eggplant, 1826; *Eleusine coracana*,* 2011.

Pachysandra, *Pseudonectria pachysandricola* on, in Germany, 5n.
Paecilomyces carneus, antagonism of, to *Ophiobolus graminis* in rhizosphere of wheat, 3061.
— *fusisporus* in soil, 2184b.
Paeonia, see Peony.
Paint, fungi on, control, 536.
—, microbiological deterioration of, 3337a.
Palm oil, fungi on, degradation by, 3660.
Panax quinquefolius, see Ginseng.
Pandrinox as seed treatment for rice, 3092.
Paniceae, *Phakospora* and *Physopella* on, world distribution of, 2250.
Panicum maximum, *Sphacelia sorghi* on, in Nigeria, 991.
— *miliaceum*, *Pseudomonas panici* on, in U.S.S.R., 2940a.
— —, *Sphacelia sorghi* on, in Nigeria, 991.
— —, *Sphacelotheca destruens* on, in U.S.S.R., 1513c; control, 1871c; immunity from, 3386, 3387.
Panogen as seed treatment for barley, 3072.
—, effect of, on *Sclerotium rolfsii* on wheat, 3063.
— 15, against *Pyricularia oryzae* on rice, 121; as seed treatment for cotton, 3457.
— — versus chloroneb, 3457.
— 42 in combination against *Ustilago nuda* on barley, 104.
Papaver somniferum, see Opium poppy.
Papaw (*Carica papaya*), *Botryodiplodia theobromae* on, perfect state of, 3517.
— bunchy top virus in Jamaica, transmission of, by vectors, 2599b.
—, *Colletotrichum* on, in Gabon, 1941.
—, — *acutatum* on, characteristics of, 370.
— decline in U.S.A., association of *Botryodiplodia* and *Corynespora cassiicola* with, 1056.
— disorder, transmission of, 2941c.
—, factors affecting replanting, 2599g.
—, *Glomerella cingulata* on, *Colletotrichum gloeosporioides* var. *minor* new var. of, 370.
—, *Helminthosporium* on, in Gabon, 1941.
— mosaic virus on cucumber, papaw, and watermelon, 832.
[Papaw], *Phytophthora nicotianae* var. *parasitica* on, 218; sporangial germination of, 2288.
*—, *Sordaria allahabadensis* on, 2079.
—, tomato big bud virus on, causing yellow crinkle, 2483.
—, — spotted wilt virus on, symptoms on, 1854d.
— virus diseases, 2e; in U.S.A., transmission of, by vectors, 1055.
— yellow crinkle virus, hosts of, identification of, with tomato big bud virus, and transmission of, by dodder, 2483.
Paper, fungi on, effect of pentachlorophenol and salicylanilide on, 2375.
—, treatment for fungus-proofing, 3337b.
— pulp, fungi on, in U.S.A., 2530.
Papilionaceae, *Malva* vein clearing virus to infect, 1502.
Papularia arundinis on timber, 2865c.
Paradichlorobenzene against mites in culture, 3700.
Paranitrophenol as seed treatment for watermelon, 2149.
Paraquat, effect of on *Corticium solani*, *Sclerotium rolfsii*, 3655.
Parathion in combination against *Gibberella fujikuroi* var. *subglutinans* on pineapple, 2787.
Parsnip (*Pastinaca sativa*), *Itersonilia pastinacae* on, antagonism of *Bacillus subtilis* and *Streptomyces* to, 3296; plant debris as source of infection, 1161; survival of in soil, 3292; transmission of by seed, 1161.
— mosaic virus on parsnip, hosts, properties and transmission of by vectors, 3311h.
— yellow fleck virus on *Anthriscus sylvestris*, parsnip, and spinach, properties of, 3311.
Parthenium argentatum, diseases of, 3554.
Parzate against *Cercospora nicotianae*, 2512; soil disinfectant, 782.
**Paspalum notatum*, *Stagonospora paspali* on, in New S. Wales, 9.
*— *quadrifarium*, *Claviceps purpurea* on, in Argentina, 1633.
**Passiflora*, *Alternaria passiflorae* on, in Canada, 3384.
*— *coerulea*, *Agrobacterium tumefaciens* on, in Poland, 1511.
Pastinaca sativa, see Parsnip.
PCBA against *Pyricularia oryzae*, 235k.
—, effect of on rice plants, 3424.
PCNB, see Quintozene.
Pea (*Pisum sativum*), *Agrobacterium tumefaciens* on, effect of light on development of, 3324.
—, *Alternaria* on leaves of, factors affecting colonization by, 3598.
—, *Aphanomyces euteiches* on, in U.S.A., 327; control, 1792; effect of cropping practice on, 3270; of cruciferous soil amendments on, 479; electron microscopy of, 189; field and lab. investigations on, 2878; method for evaluating resistance to, 478; pathogenic variability in, 1791.
—, *Ascochyta* on, in U.S.S.R., 1513i.
—, — *pisi* on, 2938c; in Canada, 359; U.S.S.R., 477, 1513i, 2561, 2879; control, 477, 1146, 2561; effect of steam-air mixture on, 1378; of thiram and zineb on biochemical processes of, 1145; factors affecting, 18; occurrence of, 3596; immunity from, 338; peroxidase activity as indicator of chemical immunization of, 1377; specialization, 1798; var. react. to, 477.

:a, *Ascochyta*] *sojaecola* on, in U.S.S.R., 3600.
, bacteria in rhizosphere of, 888.
, *Botrytis cinerea* on, in U.S.S.R., 1513i.
, *Cladosporium* on, factors affecting colonization by, 3598.
, *Colletotrichum pisi* on, in U.S.S.R., 1513i.
common mosaic virus str. 2A on pea in India, 2875.
, *Corticium solani* on, in U.S.S.R., 1513i.
, *Corynebacterium fascians* on, effect of gibberellic acid on, 1147c; kinetin on fasciation of, 1147d; of, on growth regulators, 1147b; variations in intensity of, 1147a.
damping-off, control, 480.
early browning virus related to tobacco rattle virus, 285, 2159a.
— — — on bean and *Nicotiana clevelandii*, 3025.
, effect of thiram and zineb on yield, 842b.
enation mosaic virus on broad bean and lupin, 1142.
— — — — on pea in Czechoslovakia, 3267; U.S.S.R., 1142; properties and purification of, 475, 1788; transmission of, by vectors, 75b, 1143; var. react. to, 3267.
— — — — on sweet pea, 1501.
— — — — on vetch, 1142.
-, *Erysiphe polygoni* on, in U.S.S.R., 1513i, 1790; control, 2880; factors affecting, 187; var. react. to, 1790.
-, fungi in rhizosphere of, 888.
-, *Fusarium* on, in U.S.S.R., 1513i.
-, — *martii* var. *pisi* on, effect of Al, Cu, and Fe on, 1379.
-, — *oxysporum* on, factors affecting, 187.
-, — — f.sp. *pisi* on, factors affecting, 10d; polygalacturonate transeliminase production by, 875; var. react. to, 10c.
-, — *solani* f.sp. *pisi* on, chlamydospore germination and survival of, 2132; study on, 2881.
- leaf roll virus on broad bean, 1142.
— — — — on pea in U.S.S.R., 1142; transmission of, by vectors, 1789.
-, Leguminosae witches' broom virus on, 724.
- mosaic virus on broad bean, 1142, 2888.
— — — on clover, 1142, 1634.
— — — on cowpea, 2893.
— — — on pea in Czechoslovakia, 1940; U.S.S.R., 476, 1142; effect of early infection on, 2876; hosts of, 1940; transmission of by vectors, 1940, 2876, 3378; var. react. to, 476, 3597.
—, *Mycosphaerella pinodes* on, in Canada, 3596; U.S.S.R., 1513i, 2879; control, 3596; cytology of, 1144b; effect of steam-air mixture on, 1378; of temp. on symptoms of, 3596; of thiram and zineb on biochemical processes of, 1145; of UV irradiation of seed on, 3269; identity of, 1144a; peroxidase activity as indicator of chemical immunization of, 1377.
—, *Peronospora viciae* on, in U.S.S.R., 1513i; control, 231g, 2938c.
—, *Pseudomonas fabae* on, in U.S.S.R., resistance to, 486.
—, — *syringae* on, resemblance of symptoms of, to *P. pisi*, 13p.
—, *Pythium* on, effect of actidione on, 480.
—, red clover mottle virus can infect, 141.
—, *Rhizoctonia* on, pathogenicity of isolates of, 579.
—, *Robinia pseudoacacia* mosaic virus on, 2844.
[Pea], *Sclerotinia sclerotiorum* on, trehalose and acyclic polyols in sclerotia of, 1894.
*—, *Sclerotium rolfsii* on, in India, 2669.
— seed-borne mosaic virus on broad bean and *Chenopodium amaranticolor*, 2560.
— — — — on pea in Japan, properties and transmission of, 2560.
— — — — on *Tetragonia expansa*, 2560.
— seed patterning virus disease (?) caused by broad bean mosaic virus, transmission of, by sap and seed, 1492p.
—, *Stemphylium* on, factors affecting colonization by, 3598.
— top yellows virus on pea, var. react. to, 3597.
—, *Uromyces pisi* on, 1028; effect on of pH of host tissue, 3268.
—, — — -*sativi* on, in U.S.S.R., 1513i.
—, *Verticillium dahliae* on, 2747.
—, white clover mosaic virus on, in Czechoslovakia, 2761.
— Wisconsin streak virus on pea, purification and properties of, 2877.
Peach (*Prunus persica*), *Agrobacterium tumefaciens* on, effect of preceding crop on, 1295.
—, apple chlorotic ring spot virus on, in England, causing a green mottle, 2354i.
— bark rot, *Valsa* causing, 5l.
—, cherry green ring mottle virus on, in U.S.A., 2274.
—, — necrotic ring spot virus on, effect of, on, 5k.
—, — tatter leaf virus on, in India, 671.
—, — yellows virus on, in U.S.A., maintenance of virus-free cultivars, 2274.
— 'court-noué', identification of viruses causing, transmission of, (?)by soil, 1492b.
—, *Cylindrocladium floridanum* on, in U.S.A., distinct from *C. ilicicola* and *C. scoparium*, 2468.
— decline in U.S.A., association of *Pythium* spp. with, 1044.
— diseases, tables of fungicides against, 2171.
—, *Fusicoccum amygdali* on, effect of microelements on resistance to, 378.
—, *Gilbertella persicaria* and *G. p.* var. *indica* on, C.M.I. description of, 1471.
— latent viruses, transmission of, 689.
—, lime-induced chlorosis of, in Greece, 1298.
— mosaic virus on peach, effect of DMSO on, 3502.
—, *Mycosphaerella persica* on, renamed *Mycosphaerella pruni-persicae*, 3357.
—, — *pruni-persicae* on, causing frosty mildew, *M. persica* renamed, 3357.
— necrotic ring spot virus on peach, 2274, 2778, 3502; in England, 2354h; U.S.A., 2274; effect of DMSO on, 3502; factors affecting, 1492a, 2068; maintenance of virus-free cultivars., 2274; relationship of apple mosaic virus to, 2259; serological diagnosis of, 690, 2778; var. react. to, 1492a.
— — — — on *Prunus*, 1644a.
— — — + plum line pattern viruses on *Prunus*, 1644a.
— — — virus, see also Peach ring spot virus.
—, prune dwarf virus on, effect of, 5k.
—, *Pythium dissotocum*, *P. irregulare*, and *P. vexans* on, association of, with decline, 1044.
—, *Rhizopus stolonifer* on, control, 2173; sensitivity of, to chilling, 3505.
— ring spot virus on apple, 2354h.
— — — — on cherry and damson, 2778.
— — — — on hop, 2354m.

[Peach] rosette mosaic virus on peach, transmission of, by vectors, 3136.
—, *Sambucus nigra* 'Aurea' virus can infect, 3634d.
—, *Sclerotinia fructicola* on, in Japan, 2475; C and N nutrition of, 2469; control, 376, 2173; effect of on O uptake, 2070.
—, *Sphaerotheca pannosa* on, control, 2273, 2470; symptoms of, 2273.
—, *Stereum purpureum* on, 673a; in New Zealand, 3633a; control, 2369e; effect of pruning on, 3504; of, on yield, 3504; invasion by, 672.
—, strawberry latent ring spot virus on, in Germany, (?)stunting caused by, 2275.
—, *Taphrina deformans* on, 2369e, 2777, 3503; in India, 3503; factors affecting, 3137, 3503; metabolic changes induced by, 2471, 2472.
—, toxicity of DMSO to, 3502.
—, *Tranzschelia pruni-spinosae* f. *discolor* on, in S. Africa, overwintering and viability of, 377.
—, *Valsa* on, virulence of, 51.
—, — *cincta* on, control, 2467; resistance to, 2161g.
—, *Venturia carpophila* on, control, 2273.
—, *Verticillium dahliae* on, isolation of in buds and pedicels, 1660.
— virus diseases, effect of on growth of rootstocks, 1659; interaction of growth retardants with, 2069.
—, virus-like symptoms on, 2067.
— wart virus on peach and *Prunus*, 1043.
Pear (*Pyrus communis*), *Agrobacterium tumefaciens* on, effect of preceding crop on, 1295.
—, *Alternaria kikuchiana* on, control, 11e.
—, apple chlorotic leaf spot virus on, effect of, 1293.
— blister canker virus on *Pyrus*, 2063.
— corky pit virus on pear, 2161h.
— decline virus on pear (?) in U.S.A., 682; pathological anatomy of, 2159f; relationship of to moria in Italy, 682; of phloem graft union necrosis to, 1039.
—, *Diplodia* on, 3498.
— disease in Germany, resemblance of to pear decline and pear moria, 2269; transmission of by chip budding, 2269.
— diseases, tables of fungicides against, 2171.
—, *Erwinia amylovora* on, in Canada, 1658; England, 143; *Poland, 1041; U.S.A., 1040; biochemical study of intervarietal resistance of to, 2272; dissemination of by wind, 1040; distribution of, 3631; longevity of, 1040; new record of, 1658; non-occurrence of in France, 234; symptoms of, 234; var. react. to, 685.
—, — *aroideae* on, in India, 852.
—, *Fabraea maculata* on, in U.S.S.R., 683; control, 2271; overwintering of and time of appearance of symptoms, 683.
—, *Glomerella cingulata* on, lenticel infection of, 3497.
— green ring mosaic virus on *Chenopodium quinoa*, 2268.
— — — — — on pear, separation of, from pear vein yellows virus and transmission of mechanically, 2268.
— — — — — on *Pyrus*, 2268.
— 'moria' in Italy, (?)identical with 'pear decline' in U.S.A., 682; (?)virus causing, 2463.
—, *Mycosphaerella sentina* on, penetration by and pycnospore germination in, 684.
—, *Nectria galligena* on, lenticel infection of, 3497.
[Pear], (?)new virus disease in New S. Wa 2357h.
—, *Pezicula alba* on, lenticel infection of, 34
—, — *malicorticis* on, in Germany, 10 lenticel infection of, 3497; spread of, 10
—, *Podosphaera leucotricha* on, in Norw 1294; control, 2270.
—, *Pseudomonas* on, comparison of *P.* on st fruit with, 1422.
*, — *mors-prunorum* on, in Germany, sy toms of, 2064.
—, — *syringae* on, 1422; in France, 234; It 3501; Poland, 1176g; aetiology of, 35 control, 3501; distribution of, 234; fa affecting, 1176g; incidence of, 3501; re tionship of to nutritional deficiencies, 2 relationship of to *P. mors-prunorum*, 35 symptoms of, 234, 1176g; types of infecti 3501.
—, quince sooty ring spot virus on, effect 1293.
—, — stunt virus on, effect of, 1293.
— ring pattern mosaic virus on pea Poland, 1644b; effect of, 2774; on yield,
— — — — — on *Pyrus*, 2063.
—, *Rosellinia necatrix* on roots of, co 3127.
— rough bark virus on pear in Poland, 164
—, *Sclerotinia fructicola* on, in Japan, 2475
—, — *fructigena* on, penetration by, 2457c.
— sooty ring spot virus, storage of indic buds of, 3485.
— stony pit virus on pear in Poland, 16 U.S.A., 1038; association of wood pi with, 2161h; effect of on yield, 2464; st on, 1038; var. react. to, 2464.
—, tobacco mosaic virus on, transmissio by seed, 2258.
— vein yellows virus on *Chenopodium qui* 2268.
— — — — on pear in Poland, 1644b; sepa tion of pear green ring mosaic virus fr 2268.
— — — /red mottle virus on *Pyrus*, 2063.
—, *Venturia pirina* on, in England, 230 Germany, 6, 1844; control, 230m, 53 2061; effect of captan on, 2270; of, on yi 6.
— virus diseases, economic importance 3018.
— wood pitting, association of stony pit vi with, 2161h.
Pecan (*Carya pecan*), *Fusicladium effusum* in S. Africa, 1752; U.S.A., 2114.
(?)*Pectobacterium parthenii* on *Dieffenbac amoena*, 2438.
Pelargonium, *Agrobacterium tumefaciens* comparison of cellular activities induced with *Xanthomonas pelargonii*, 1622.
—, *Botrytis cinerea* on, 1281; control, 659.
—, *Corynebacterium fascians* on, aetiology a symptoms of, 1281.
—, effect of sap of on bean yellow mosaic vi str. on lupin, 1640.
—, *Puccinia pelargonii-zonalis* on, in Belgiu 2043; England, 354; Germany, 1620; Ita 3115; Switzerland, 1846, 2445; biologi characteristics of, 2445; control, 1620, 16 2043, 2438, 2445; development of, 20 factors affecting, 1621, 3115; geographi distribution of, 354; morphology of, 20 spread of, 3115; symptoms of, 1621, 20 2438, 2445.

elargonium], tobacco ring spot virus on, in anada, 2748.
Xanthomonas pelargonii on, histological nd histochemical studies of reactions of, 522.
capitatum dieback in Morocco, fungi ssociated with, 1678.
icularia filamentosa on potato, 1697.
coleroga on *Hevea* rubber, 1088.
icillium bilaji chalabuda on maize, 2706.
refeldianum, production of brefeldin A by, 992.
revicompactum as test fungus, 1200.
candidoflavum in soil, 1908.
chrysogenum, control, 2970.
— in rhizosphere of bean, 61a.
— on wheat, 591.
citrinum in flour, 535.
— on wheat, 591.
corymbiferum on *Iris*, 1615.
crustosum in soil, 3682.
cyclopium as test fungus, 1200.
— in flour, 535.
digitatum, effect of sodium orthophenylphenate on development of, 1195.
—, inhibition of, by trichothecin, 2972.
— on citrus, see Citrus.
— on orange, see Orange.
expansum, antagonism of, to *Armillaria mellea* on pine, 2120.
—, effect of sodium orthophenylphenate on development of, 1195.
—, genetics of resistance to sodium dehydroacetate and sodium ortho-phenylphenate, 1483.
— on apple, 1036, 1213.
— on wheat, 591.
funiculosum as test fungus, 1200.
—, decomposition of methyl cellulose by, 551.
— in rhizosphere of *Acer platanoides*, 2623.
— on pineapple, 3634i.
— on rice, 3416b.
italicum, electrophoretic study of endopolygalacturonases from virulent and avirulent strs. of, 3669.
— on citrus, 1005.
— on orange, 1004, 1213, 3102.
janthinellum in rhizosphere of bean, 61a.
— in soil, 1362.
kapuscinskii in rhizosphere of bean, 61a.
lilacinum in soil, 1908.
nigricans, antagonism of to *Ophiobolus graminis* in rhizosphere of wheat, 3061.
— in rhizosphere of bean, 61a.
notatum on maize, 2706.
oxalicum, mechanism of action of flavensomycin on, 3333.
— on maize, 117, 982.
psittacium on wheat grain, 3065.
puberulum on packing material, 1370.
purpurogenum, antagonism of to phytopathogenic fungi, 3004.
—, decomposition of methyl cellulose by, 551.
raistrickii on wheat, 3065.
rugulosum on maize, 2706.
— on wheat, 3065.
terlikowskii, antagonism of to *Armillaria mellea* on pine, 2120.
urticae in flour, 535.
— in soil, 3682.
vinaceum in soil, 1217.
Peniophora gigantea against *Fomes annosus* on pine, 440.
— — on pine, 461, 2108, 2538.
— — on timber, 173d.
Pennisetum glaucum, *Helminthosporium* on, in Japan, resemblance of to *H. sacchari*, 2427.
— —, *Tolyposporium penicillariae* on, control, 3087.
— *typhoides*, *Curvularia penniseti* var. *poonensis* on, in India, symptoms of, 314.
— —, *Xanthomonas annamalaiensis* on, in India, 3632e.
— *typhoideum*, *Claviceps microcephala* on, effect of antibiotics and fungicides on sclerotial development and germination of, 2709.
Pentachlorobenzylalcohol, see PCBA.
Pentachloromandelonitrile, see Oryzon.
Pentachloronitrobenzene, see Quintozene.
Pentachlorophenol as timber preservative, 178, 2865c.
—, effect of on fungi on paper, 2375.
—, resistance of *Rhizopus stolonifer* to, 2375.
Pentachlorophenolate against moulds on straw, 2376.
Pentacholorophenyl acetate, see Rabcon.
Pentaene g_8, production of by *Streptomyces anandii*, 534.
**Pentas lanceolata*, *Puccinia pentadicola* on, in Mauritius, 2943c.
Pentatomidae transmitting *Nematospora coryli*, 1804.
Pentatrichopus fragaefolii transmitting strawberry virus, 1671.
— *jacobi*, non-retention of strawberry viruses by, 1049.
*Peony (*Paeonia*), *Phyllosticta arborea* on, in Czechoslovakia, 3355.
Pepper, black (*Piper nigrum*), *Elsinoe* on, in the Cameroons, closely related to *E. piperis* on *Piper capense*, 1680.
—, —, mosaic virus on black pepper in Malaya, transmission of by grafting, 512b.
—, —, *Phytophthora* on, in Jamaica, resemblance of to disease in Sarawak, 3158.
—, —, — *palmivora* on, in Brazil, 703; Sarawak, 3159; effect of on yield, 703; pathogenicity of zoospores of, 3159; transmission of by snails, 3159.
—, —, virus disease in the Philippines, (?) identical with ' pepper stunt ', 2g.
Peppermint (*Mentha piperita*), *Verticillium alboatrum* on, effect of crop rotation on, 2792.
Perenox against *Exobasidium vexans* on tea, 1720; *Glomerella cingulata* on coffee, 2024.
Perezin against *Exobasidium vexans* tea on, 1720.
—, constituents of, 1720.
**Periconia byssoides* on *Ricinus communis*, 1308.
— *circinata* on sorghum, 311, 3090.
— *igniaria* on beet seed, 786.
Peridermium filamentosum on pine, 2857.
— *harknessii*, aeciospore germination of, 1116.
— —, cytology of aeciospores and aeciospore germ tubes of, 1117.
— — on pine, 769, 2328, 2847e.
— —, technique for dispersing spores evenly, 1116.
— *pini* on pine, 440, *2108, 3233.
— *stalactiforme*, aeciospore germination of, 1116.
— —, cytology of aeciospores and aeciospore germ tubes of, 1117.

[*Peridermium stalactiforme*] on pine, 2856, 2857.
— —, technique for dispersing spores evenly, 1116.
Permidin as corm treatment for *Gladiolus*, 651.
Peronospora destructor on onion, see Onion.
— *effusa*, see *P. farinosa*.
— *farinosa* on beet, see Beet.
— — on spinach, 1508.
— *manshurica* on soybean, 1513i.
— *parasitica* on broccoli, 2126.
— — on cabbage, 2126, 2594a.
— — on cauliflower, 3638.
— — on Cruciferae, 2126.
— *schachtii*, see *P. farinosa*.
*— *sparsa* on rose, 2943b.
— *tabacina*, effect of light on sporulation of, 424.
— — on *Nicotiana*, 1850b, 2515.
— — on *N. debneyi*, 2513.
— — on *N. rustica*, 428b.
— — on tobacco, see Tobacco.
— —, storage of conidia of, 3316c.
— *trifoliorum* on clover, 1508.
— *viciae* on pea, 231g, 1513i, 2938c.
Peronosporaceae in Mongolia, 895; U.S.S.R., 1473.
Peronosporales in France, 1478; Hungary, 555a; Mongolia, 895; U.S.S.R., 1473; ecology of, 1478.
Persea americana, see Avocado Pear.
Pestalotia brassicicola on cauliflower, 3257.
— *dicolorata* var. *dichaeta* on *Thuja occidentalis* and *T. orientalis* in Rumania, 2542.
— *gracilis*, C and N nutrition of, 3664.
— *macrotricha*, inhibition of spore germination of by soil fungistatic principle from *Pseudomonas*, 3003.
— *palmarum* on coconut and oil palm, 3389.
— *theae* on tea, 1456a,b.
— *truncata* on clover, 2763.
— *veronicae* + *Scirrhia pini* on pine, 3227.
Pestalotiopsis versicolor, nutritional and pathological studies on, 1853.
Pesticide handbook, 'Entoma', 19th revised edition of, 2962.
Pesticides, analytical methods for, 23.
—, Guide to new, 22, 525.
—, list of common names for, 854.
—, agricultural, formulations and guide to application, 21.
Petasites albus, *Coleosporium petasitis* on, in Hungary, 1115.
Petrolatum as wound dressing, 672.
Petroleum oil A in combination against *Botrytis cinerea* on currant, 231e.
Petunia, *Arabis* mosaic virus on, electron microscopy of, 2654.
—, groundnut ringspot virus can infect, 1389a.
—, *Malvastrum coromandelium* yellow vein mosaic virus on, 76.
— mosaic disease in India, caused by (?)str. of chilli mosaic virus or *Petunia* yellow mottle virus, transmission of, 3467.
— — — on Solanaceae, 3467.
—, *Phytophthora nicotianae* var. *parasitica* on, 134.
—, rhubarb virus can infect, 21611.
—, stolbur virus on, gibberellin-like substances in, 3374.
—, tobacco mosaic virus tomato str. on, in Japan, 154.
—, tomato spotted wilt virus on, 1854d; effect of N-6 benzyladenine and kinetin on, 3704.
Pezicula alba on apple, see Apple.
— — on pear, 3497.
— *malicorticis* on apple, see Apple.
— — on pear, 1035, 3497.
**Phacidiopycnis pseudotsugae* on *Tsuga densis*, 2600g.
Phacidium infestans on pine, 774, 1358, 2
Phaeocryptopus gaeumanii on pine, 463.
Phaeoisariopsis griseola on bean, fo
Isariopsis griseola, 2343.
**Phaeosphaeria maydis* on maize, 3632b.
— — proposed for *Sphaerulina mayd*
maize, 3632.
**Phaius mishmiensis*, *Coleosporium bleti*
in U.S.A., 3635a.
Phalaris arundinacea, *Claviceps purpure*
germination pattern and stroma form
in, 3680.
Phaltan against *Botrytis cinerea* on lettu
Cunninghamella on pumpkin, 819; *Pe*
alba on apple, 2058a; plant diseases,
Tilletia caries, 89; *Venturia inaequalis*,
as seed treatment for cereals, 89.
—, effect of, on *Botrytis cinerea*, 26; on c
of *Oidium begoniae* var. *macrosporum*
Uncinula necator, 3654; on growth of p
pathogenic bacteria, 2965; on pollen g
nation and fruit yield of cranberry, 1
—, method for estimating residues of on s
berry, 27.
— in combination against *Podosphaera l*
tricha, 374.
— 50 against *Pezicula* on apple, 232c.
— —, toxicity of to apple, 232c.
— — versus orthocide 50, 232c.
Phascomylone against cucumber root
842a.
Phaseolus, bean yellow mosaic virus can ir
704.
—, *Colletotrichum lindemuthianum* on, effe
actidione on, 533; effect of N, P, and K
2341.
—, *Pseudomonas syringae* on, 13p.
—, white clover mosaic virus on, in Cze
slovakia, 2761.
— *angularis*, Leguminosae witches' broom
on, 724.
— —, *Robinia pseudoacacia* mosaic
on, 2844.
— *atropurpureus*, *Ascochyta phaseolorum* o
Queensland, symptoms of, 3276.
— *aureus*, *A. sojaecola* on, in U.S.S.R., 36
— —, *Cephalosporium gregatum* on, 3634j
— —, *Corticium solani* on, 193a.
— —, *Pythium aphanidermatum* on, stim
tion of, by exudates from seeds of, 359
— *calcaratus*, coconut cadang-cadang di
can infect, 236b.
— *coccineus*, see Bean, Runner.
— *lunatus*, cucumber mosaic virus on, t
mission of by vectors, 2204.
— —, *Phytophthora phaseoli* on, effect of
inoculation temp. on colonization of s
of, by, 800, 801; sporulation of, 2344.
— *mungo*, bean common mosaic virus
1142.
— —, *Uromyces appendiculatus* on, in Se
lia, morphology and symptoms of, 802.
— *vulgaris*, see Bean, French and Runner.
Phelam DP, effect of, on fungi, 2172.
Phellinus in Lithuanian S.S.R., 1849b.
Phenanthrenequinone against *Tilletia c*
and *T. foetida*, 933.

obarbital and its Na salt against *Sphaero-ca fuliginea* on cucumber, 1396.
thiuram as seed treatment for larch, pine, d *Thuja plicata*, 2327b.
thiuram-molybdate against root rot of tton, 2026; as seed treatment for larch, ie, and *Thuja plicata*, 2327b.
ylhydrazine derivatives against *Pyri-laria oryzae*, 3423a.
yl mercuric chloride as corm treatment for *adiolus*, 651.
- iodide against *Pyricularia oryzae*, 3423a.
ercury acetate, see PMA.
- bromide, see Agronal.
- chloride, see PMC.
- dimethyldithiocarbamate in combination ainst *Venturia inaequalis*, 2263.
locephala phycomyces on timber, 3251.
lophora fastigiata on timber, 2865c.
alorum on apple, 680.
odendron, *Erwinia chrysanthemi* strs. on, thogenicity and symptoms of, 2600d.
xycardium, *Xanthomonas* on, isolation and mptoms of, 2600c.
lebia atkinsoniana on oak, 158b.
omycin, effect of on growth of *Botrytis*, 56.
um mottle virus, transmission of, 3310c.
Puccinia graminis f.sp. *phlei-pratensis*, var. act. to, 1024.
ratense, fungi on, in Finland, 3314.
—, *Sclerotinia borealis* on, in Finland, geo-raphical distribution of, 3469.
lox, *Phyllosticta phlogis* on, in Czecho-ovakia, 3355.
Thielaviopsis basicola on, effect of, on, 749; factors affecting, 2749.
enix dactylifera, see Date palm.
liota adiposa on *Abies*, 453.
— on oriental beech, 751.
alnicola on spruce, 2847c.
squarrosa on aspen, 762.
ma abietis on *Abies*, 454.
apiicola on celery, 2914.
destructiva on tomato, 156.
flaccida on vine, 2936.
forsythiae on *Forsythia intermedia*, 1611.
foveata on potato, 3311d, 3548.
herbarum f.sp. *medicaginis*, taxonomy of, 121.
— var. *medicaginis*, characterization and solation of phomic acid from, 3475.
— — — — on grasses, 508c.
— — — on lucerne, 3474.
mali on *Malus*, 2041.
psidii on guava, 1054.
punicae on pomegranate, 395, *2079.
solanicola on potato, 4a, 1317, 3630a.
— var. *foveata* on potato, 2811, 3629b, 3630a.
viticis on *Vitex keniensis*, 163, 3223.
tomic acid, characterization and isolation of from *Phoma herbarum* var. *medicaginis*, 3475.
tomopsis abietina on *Abies*, 454.
– *amraii* on mango, 2079.
casuarinae not affecting *Casuarina cunning-hamiana*, *C. glauca*, and *C. stricta*, 2319.
— on *C. humilis*, 2319.
gardeniae on *Gardenia*, 2745.
– *macrospora* on *Populus deltoides*, 2947f.
– *manihotis* on cassava, 64.
– *millettiae*, description of, 64.
mori on mulberry, 1749.
[*Phomopsis*] *pseudotsugae* on pine, 463.
— *sclerotioides* on Cucurbitaceae, 3612.
— *theae* on tea, 1719.
— —, symptoms of tea collar canker disease in India similar to, 1718b.
Phorodon humuli transmitting hop mosaic virus, 2291.
Phosphate as seed treatment for potato, 3552.
—, effect of, on resistance of potato leaves to *Phytophthora infestans*, 1692.
Phosphorobacterin as seed treatment for pea, 187.
Phosphorus deficiency in avocado pear, 3149.
— — in strawberry, 3145.
— — in vine, 2931b.
—, effect of different concentrations of, on production of chlamydospores and macro- and micro-conidia of *Fusarium udum*, 1383; of, on Ca content of cotton, 625; on *Colleto-trichum lindemuthianum* on *Phaseolus*, 2341; on Na content of cotton, 625.
— nutrition of eggplant in relation to *Verti-cillium dahliae*, 502.
Phragmidium mucronatum on rose, 2045.
Phthalan, adaptation of *Venturia inaequalis* to, 2461.
— against diseases of stored fruit, 3484; *Sclerotinia* on apple, 2460; *Sphaerotheca mors-uvae* on gooseberry, 697; *Venturia inaequalis*, 2940e.
Phthaloxin, fungicidal activity of, 532.
Phycomycetes, behaviour of zoospores in plant pathogenic, 516j.
— in Poland, 3005.
— on desert plants, 39.
— on pine, 462.
Phygon, adaptation of *Venturia inaequalis* to, 2461.
— against *Ascochyta cucumis* on cucumber, 573h; *Plasmopara viticola*, 2588; *Sclerotinia* on apple, 2460; *Scolecotrichum meloph-thorum* on cucumber, 573e; *Sphaerotheca mors-uvae* on gooseberry, 697; *Venturia inaequalis*, 2940e.
—, effect of on viability of wheat seed, 3066.
— in combination against *Plasmopara viticola*, 2588.
— XL against *Curvularia inaequalis* on maize, 2003.
Phyllachora huberi on *Hevea* rubber, 1088.
— *lespedezae* on *Lespedeza*, 368.
Phyllactinia suffulta on mulberry, 1112.
Phyllosphere, cuticle decomposition by micro-organisms in, 1843h.
Phyllosticta in India, index of, 896.
*— *alnigena* on alder, 3355.
*— *arborea* on peony, 3355.
*— *auerswaldii* on box, 3355.
*— *catalpae* on *Catalpa bignonioides*, 1011.
— *citricola* on citrus, 323.
*— *coliicola* on *Cola nitida*, 265.
*— *daturicola* on *Datura*, 3355.
*— *dracaenae* on *Dracaena*, 3384.
*— *ebuli* on *Sambucus ebulus*, 3355.
*— *fragaricola* on strawberry, 1663.
— *glumarum* on rice, 82.
*— *juglandis* on walnut, 3355.
*— *julia* on *Datura*, 3355.
*— *lacerans* on elm, 3355.
— *latifolia* on *Kalmia latifolia*, 1011.
— *lentisci* on *Pistacia vera*, 3388.
*— *liatridis* on *Liatris spicata*, 1011.
*— *liliicola* on lily, 3355.

*[*Phyllosticta*] *monardicola* on *Monarda didyma*, 1011.
*— *negundinis* on *Acer negundo*, 3355.
*— *opuli* on *Viburnum*, 3355.
*— *petrakii* on *Kerria japonica*, 1011.
*— *phacidioides* on box, 3355.
*— *phlogis* on *Phlox*, 3355.
*— *primulicola on Primula acaulis*, 3355.
— *ragatensis* on *Vitex keniensis*, 163, 3223.
*— *ricini* on *Ricinus*, 3355.
*— *solani* on *Datura metel*, 3156.
*— *sorghiphila* on sorghum, 989.
*— *stettiniana* on beech, 1916.
*— *vaccinii* on *Vaccinium corymbosum*, 3384.
*— *westendorpii* on barberry, 3355.
*— *zeae* on maize, 3355.
Phyllotreta transmitting radish mosaic virus, 2870.
Phymatotrichum omnivorum on cotton, 1591, 2619.
— — on maize, 2619.
— — on *Parthenium argentatum*, 3554.
Physalis, *Xanthomonas vesicatoria* str. on, resemblance of, to *X. physalidicola* and *X. physalidis*, 2484.
— *floridana* as indicator for potato leaf roll virus, 3174, 3175.
— —, potato leaf roll virus on, transmission of, by vectors, 75a, 403.
— —, turnip mild yellows virus on, in Europe and N. America, 2592i.
— — vein blotch virus on *Physalis floridana*, component of turnip latent virus complex, *P. floridana* yellow speck virus associated with, transmission of, 284.
— — yellow speck virus associated with *P. floridana* vein blotch virus on *P. floridana*, 284.
— *peruviana*, *Anthurium andraeanum* virus on, transmission of, 1854c.
— —, *Xanthomonas vesicatoria* str. on, resemblance of to *X. physalidicola* and *X. physalidis*, 2484.
Physalospora obtusa on apple, 3386, 1513q, 2173.
— — on *Malus*, 2041.
Physoderma maydis on maize, 1513h.
— *trifolii* on clover and subterranean clover, 669.
Phytoactin against *Ceratocystis fagacearum* on oak, 757.
—, effect of, on *Ceratocystis fagacearum* on oak, 757; on *Peridermium harknessii* on pine, 2847e; on *Saccharomyces pastorianus*, 2610.
—, non-inhibition of *Peridermium harknessii* on pine by, 769.
Phytoalexins, review of, 3656.
Phytobacteriomycin as seed treatment for bean, 192.
Phytoncides, biological importance and use of, 864.
—, effect of on *Phytophthora infestans* on potato, 2803; *Valsa sordida* on poplar, 2842.
Phytopathology, Agricultural, treatise on [Rumanian], Vol. I, 2954.
—, Annual Review of, 516.
—, books on, 17, 517, 3318.
— News, Vol. 1, No. 1, 2950.
— & Plant Protection [Klinkowski *et al.*], II Diseases and pests of field crops, 2955.
Phytophthora, C.M.I. descriptions of, 5 spp., 3008.
— (?)*arecae* on coconut, 3389.
[*Phytophthora arecae*] on tomato, 1335.
— *cactorum*, effect of amino and organic on sexual reproduction of, 2181; of sterol on growth of, 2384.
*— — on almond, 1299.
— — on apple, 679, 1647.
— — on cactus, 2037.
— — on *Fuchsia*, 3460a.
— — on soybean, 2569.
*— — on stone fruit, 1945a.
— — on strawberry, 1672, 2457b, 2596
— —, technique for obtaining single-co cultures of, 2649.
— *cambivora* on apple, 1647.
— *capsici*, movement of zoospores in, 1460.
— — on *Capsicum*, see *Capsicum*.
— — on tomato, 2159h, 2831.
— —, relationship between sterol and sporangia production of, 12a.
— —, study on, 838.
— *cinnamomi*, effect of host and non-ho exudates and amino acids on zoospor 12e.
— —, inhibition of zoospore germinati mycelial growth of, by diatretyne 2979.
— — on avocado pear, 390, 3148.
— — on evergreen trees, 764.
— — on ornamentals, 3111.
— — on pine, 2179, 2979.
— — on *Rhododendron*, 2357k.
— — on vine, 2357j.
— — on walnut, 1114.
— —, physiology of germination of chla spores of, 12c.
— —, starch gel electrophoresis of enz from, 879.
— *citricola* on apple, 1647.
*— — on elder, 1603.
— — on hop, 1851d.
*— — on lilac, 1603.
— *citrophthora*, effect of culture media light on, 3678; of root exudates and a acids on chemotaxis of, 12e.
— — on citrus, 1002, 1580, 3440.
— —, starch gel electrophoresis of enz from, 879.
*— *cryptogea* on chicory, 211.
— *drechsleri* (?)on *Capsicum*, 3359.
— — on *Parthenium argentatum*, 3554.
— *erythroseptica*, isoelectric points of in tion to sexuality, 1209.
— — on potato, 2092.
— *fragariae*, effect of phenols on growt physiologic races of, 3343.
— — on *Duchesnea indica*, 3390.
— — on *Fragaria chiloensis*, 2075.
— — on *Geum macrophyllum*, Rosaceae, *Rubus idaeus*, 3390.
— — on strawberry, see Strawberry.
— *heveae*, chemical composition of hy wall of, 2994.
— —, effect of amino and organic acid sexual reproduction of, 2181.
— *infestans*, cytochemical determination c in mycelium of, 2993.
— —, effect of ethyl methane and UV ligh 1461.
— —, fine structures of sporangia of, 294
— —, isoelectric points of in relatio sexuality, 1209.
— — on potato, see Potato.

ophthora infestans] on *Solanum*, 1067.
on *S. muricatum*, 219.
on tomato, see Tomato.
, reducing compounds in relation to
owth of, 880.
, ultra structure of haustoria and hyphae
900.
teralis on *Chamaecyparis*, 3012.
neadii on *Hevea* rubber, 1090a, 1091,
2815.
negasperma in soil, 1906.
- on apple, 1647.
- on lucerne, 2769.
- var. *sojae* on soybean, 2569.
cotianae, antagonism of soil bacteria and
ngi to, 3004.
- on sisal, 132.
- on tobacco, see Tobacco.
-, serological differentiation of *Pythium*
hanidermatum from, 1921.
- var. *parasitica*, antagonism of *Tricho-*
rma viride to, 3637.
- — — in soil, 1854a, 2599g.
- — — on box, 134.
- — — on carnation, 647.
- — — on citrus, 323, 3433, 3434.
- — — on eggplant, 218.
- — — on loquat, 686.
- — — on papaw, 2288.
- — — on *Pisonia brunoniana*, 5o.
- — — on *Sesamum*, 2793a,b.
- — — on tomato, 2159h, 2831.
- — — —, physiology of, 1459.
- — — —, serological differentiation of
ythium aphanidermatum from, 1921.
- — — —, ultrastructure of haustoria and
yphae of, 900.
almivora, effect of β-sitosterol on growth
, 2384; of root exudates and amino acids
n chemotaxis of, 12e.
– on coconut, 2358b, 3389.
– on *Hevea* rubber, see Rubber.
– on pepper, black, 703, 3159.
– on sisal, 132.
–, physiology of, 1459.
–, relationship between sterol and light in
porangia production of, 12a.
–, sexual reproduction of, 1485.
–, starch gel electrophoresis of enzymes
om, 879.
haseoli on *Phaseolus lunatus*, 800, 801, 2344.
porri on leek, 1846.
richardiae on tomato, 1335.
syringae on citrus, 3101.
— on clementine, 326.
toptus ribis transmitting black currant
eversion virus, 382.
ea, see Spruce.
sma quadratum, beet leaf curl virus on,
roperties of, 785b.
— transmitting beet leaf curl virus, 785a,
135, 2128, 2552.
eon pea (*Cajanus cajan*), *Fusarium udum* on,
ffect of different P concs. on spore production
f, 1383.
— sterility mosaic virus on pigeon pea, effect
f on enzyme activity, 803; inhibition of
usarium udum by, 488; organic acid
netabolism and respiration of, 1153; trans-
nission of by vectors, 804.
nento (*Pimenta officinalis*), *Cercospora* on,
n Gabon, 1941.
Puccinia psidii on, factors affecting, 2599.
Pine (*Pinus*), *Alternaria* on, in U.S.S.R., 2327c.
—, *Amanita rubescens* on, forming mycorrhiza, 170.
—, *Arceuthobium campylopodum* f. *campylopodum* on, in U.S.A., biological control of, 2164.
—, *Armillaria mellea* on, in Brazil, 2848; Canada, 158b; Chile, 3227; antagonism of fungi to, 2120.
—, ascomycetes on, in Czechoslovakia, 462.
—, *Aureobasidium pullulans* on, effect of soil moisture on, 461.
— *Boletus luteus* on forming mycorrhiza, 2979.
—, — *sibiricus* on forming mycorrhiza in Yugoslavia, 2378.
—, *Botryodiplodia theobromae* on, 1353a.
— canker in U.S.S.R., (?)*Pseudomonas pini* causing, 3236.
—, *Cenangium singulare* on, non-inhibition of by actidione, 769.
—, *Cenococcum graniforme* on, forming mycorrhiza in India, 1440.
—, *Ceratocystis coerulescens* on, in Rumania, associated with *C. piceae*, 1355.
—, — *fimbriata* on, non-inhibition of by actidione, 769.
—, — *montia* on, development of secondary resinosis lethal to, 3586.
—,— *piceae* on, in Rumania, *C. coerulescens* associated with, 1355.
—, *Cercospora pini-densiflorae* on, in Tanzania, 1745c.
—, *Coleosporium* on, in Hungary, herbaceous plants as alternate hosts of, 1115.
—, — *asterum* on, in Canada, 158c, 459; relationship between *C. viburni* and, 459.
—, — *campanulae* on, in U.S.S.R., 1337.
—, — *viburni* on, in Canada, geographical distribution of, relationship between *C. asterum* and, 459.
—, *Coniophora puteana* on stumps of, effect of nitrite on, 2863.
—, *Corticium solani* on, 166, 1353a; in Germany, 773, 1106; control, 773, 1353a.
—, *Cronartium comandrae* on, in U.S.A., spread of, 1118; effect of on yield, 2856.
—, — *comptoniae* on, amendments to records of distribution of, 770; effect of on yield, 2856.
—, — *conigenum* on, in Guatemala, spread of, 1119.
—, — *flaccidum* on, in U.S.S.R., effect of on mineral nutrition of, 3233.
—, — *fusiforme* on, in U.S.A., 168; effect of actidione on, 2121; antibiotics on, 2854; geographical variation in growth, infection and survival of, 168; penetration by, 13i; persistence of albinism in, 1122.
—, — *quercuum* on, effect of, on yield, 2856; histology of, 2855.
—, — *ribicola* on, cytochemical localization of specific dehydrogenases in, 1356; penetration by, 13i; relationship of growth regulators to development of symptoms of, 2537; *Tuberculina maxima* parasitizing, 1757.
—, *Crumenula sororia* on, in Scotland, 440.
—, *Curvularia geniculata* on, 1353a,b.
—, *Cylindrocladium* and *C. scoparium* on, in Brazil, 2848.
— damping-off of in Chile, 3227; East Africa, 3225a,b; U.S.S.R., 2327b; control, 1352, 2327a,b, 3225a,b; fungi associated with, 166; spec. react. to, 1352.

[Pine], *Dendroctonus ponderosae* on, development of secondary resinosis lethal to, 3586.
— die-back in Germany, 1126; Tanzania, 2861; U.S.A., 771; B deficiency causing, 2861; control, 2861; factors affecting, 771; relationship between frost resistance, microclimate, and, 2541; *Scleroderris lagerbergii* causing, 1126; symptoms of, 771.
—, *Diplodia pinea* on, in Brazil, 2848.
— diseases in Chile, 3227; France, 463.
—, *Dothistroma pini* var. *keniensis* on, in Africa, 2941d; Kenya, description of, 3228.
—, — — — *linearis* on, in Canada and U.S.A., 2941d.
—, — — — *pini* on, geographical distribution of, 2941d.
—, *Endogone lactiflua* on, forming mycorrhiza, 868.
—, *Epicoccum nigrum* on, in Germany, association with dieback, 1126.
—, *Europhium* on, development of secondary resinosis lethal to, 3586.
—, *Fomes annosus* on, in Canada, 158c; Mexico, 3212b; U.S.S.R., 3234; biological control of, 440, 2538; causing root and butt rot, 3212b; control, 440, 2108; development of, 1762; effect of soil moisture on growth of, 461, 772; of toxin produced by, 2862; of, on 1763; on heartwood of, 3234; on yield, 2108; factors affecting, 3234; immunity to, 3387; incidence of, 1762; inhibition of by nitrite, 2863; spread of, 158c.
—, — *pini* on, development and incidence of, 1762.
—, fungi on stumps of, inhibition of *F. annosus* by, 2538.
—, — imperfecti on, in Czechoslovakia, 462.
—, *Fusarium* on, 166; in Brazil, 2848; Chile, 1354, 3227; U.S.S.R., 1337, 2327c; S. Australia, 2852; causing damping-off, 3227; control, 2327c; factors affecting, 1354.
—, — *avenaceum* on, in U.S.S.R., soil as source of infection, 456; transmission of by seed, 456.
—, — *oxysporum* on, 1353a; in S. Australia, 2852; control, 1353b.
—, — *semitectum* on, in U.S.S.R., soil as source of infection, transmission of by seed, 456.
—, — *solani* on, 1353a; in S. Australia, 2852; U.S.S.R., 456; control, 456, 1353b; soil as source of infection, transmission of by seed, 456.
— ' fused needle ' in Brazil, 2848.
—, *Gibberella fujikuroi* on, antagonism of fungi to, 2853.
—, *Haplosporella* on, in Chile, causing dieback, 3227.
—, *Hebeloma crustuliniforme* on, effect of nematodes on, 1889.
*—, *Hormiscium antiquum* on, in Czechoslovakia, 462.
—, *Hypoderma mexicanum* on, 2847f; resemblance of perfect state of, to *H. lethale* and *H. saccatum*, 13m.
—, *Hypoxylon pruinatum* on, non-inhibition of by actidione, 769.
—, *Laccaria laccata* forming mycorrhiza on, 2979.
—, *Leptographium* on, symptoms of, 36341.
—, *Leucopaxillus cerealis* on, forming mycorrhiza, 2979.
— litter, mycology of, 440b.
—, *Lophodermium pinastri* on 3630d; in, Czechoslovakia, 1758; Germany, 169; J 3232; control, 1758, 1759; effect of tem dispersal and germination of ascospor 3232; factors affecting, 169, 3232.
[Pine], *Macrophomina phaseoli* on roots S. Australia, 2852.
— mottle virus on pine in Europe, 442.
—, mould fungi on seeds of, inhibit growth of by UV radiation, 3224.
—, mycorrhiza of, in Finland, 245a, 1205; 1441; Yugoslavia, 2378; effect of soi infectants on, 1889; fine structure of inoculation of, 1843d; resistance of fection by *Phytophthora cinnamomi*, vertical distribution of, 1205.
—, *Mycosphaerella pinicola* on, in Ta 1745d.
—, *Naemospora strobi* on, in Germany, ation of with dieback, 1126.
—, *Nectria fuckeliana* on, in Canada, 15
— needle blight, histological studies of toms of, 1359.
—, *Ophiostoma imperfectum* and *O. pini* Rumania, 1355.
—, ozone damage, effect of on, 171.
— — needle mottle in U.S.A., associated needle drop, premature chlorosis, senescence, 13k.
—, *Penicillium* on, effect of nitrite on, 28 soil moisture on, 461.
—, *Peniophora gigantea* on, 2108; effect c moisture on, 461.
—, *Peridermium filamentosum* on, in U effect of selective felling on, 2857.
—, — *harknessii* on, in U.S.A., factors affe 2328; effect of phytoactin on, 2847e; inhibition of by actidione and phyto 769.
—, — *pini* on, in Scotland, 440; U.S 3233; Wales, *2108; effect of on mi nutrition of, 3233.
—, — *stalactiforme* on, in U.S.A., effe selective felling on, 2857; of, on yield, *pini* associated with, symptoms of, 28
—, *Phacidium infestans* on, in U.S factors affecting development of, 2122 trol, 1358; incidence of and spore dis in, 774.
—, *Phaeocryptopus gaeumannii* and *Phom pseudotsugae* on, in France, biology o control, 463.
—, phycomycetes on, in Czechoslovakia,
—, *Phytophthora cinnamomi* on, effe mycorrhiza on infection by, 2179; r ectotrophic mycorrhizal fungi in resis of roots to, 2979.
—, *Pisolithus tinctorius* on, forming m hiza, 2979.
—, *Pleurophomella* on, in Germany, associ of, with dieback, 1126.
—, *Polyporus anceps* on, in U.S.A., 2847a
—, — *schweinitzii* on, development and dence of, 1762.
—, — *tomentosus* on, in Canada, 158b.
—, — — var. *circinatus* on, in U.S.A., 3
—, *Pythium* on, 1353a; in Germany, in nurseries, 1106; control, 1353b.
—, — *acanthicum* on, 1353a, b.
—, — *debaryanum* on, in Germany, function of endodermis in resistance to,
—, — *paroecandrum* on, in Germany, 11
—, — *ultimum* on, in Germany, 1106; eff root exudates of on, 3587.

e, *Pythium*] *vexans* in seedbed soil of, chnique for isolating, 165.
Rhabdocline pseudotsugae on, in France, iology of and control, 463.
, *Rhinotrichum repens* on, in Czechovakia, 462.
Rhizoctonia on, in Brazil, 2848; U.S.S.R., 337, 2327c; control, 2327c.
Scirrhia acicola on, in U.S.A., 3230; U.S.S.R., 3231; control, 3231, 3584; factors ffecting, 3230, 3231; life-history, morphogy and pathogenicity of, 2329; perfect tate of *Dothistroma acicola*, 3585; spread of nd symptoms of, 3231; synonymy of perfect nd imperfect states of, 3585.
— — *pini* on, in Canada, 457; Chile, 3227; rance, 2859; New Zealand, 1124; Tanania, 458, 3229; U.S.A., 2847b; U.S.S.R., 125; causing needle blight, 1125, 3227; ontrol, 458, 2540, 3229; effect of shade on ncidence of, 1357; effect of, on, 1760; tiology of, 1760; factors affecting, 1760, 227; growth and sporulation of, 2941d; nfection and penetration by, 13j; perfect tate of *Dothistroma pini*, 457; spec. react. o, 1124, 2941d; spread of, 167, 3227.
— — + *Pestalotia veronicae* on, in Chile, causing needle blight, 3227.
Scleroderris lagerbergii on, in Canada, 158c, 2330, 3588; Europe, 2123; Germany, 1126; U.S.A., 1761, 2858; causing die-back, 1126; control, 2123; difference between symptoms of frost injury and, 460; effect of on yield, 2858; factors affecting, 460; history of, 2123; incidence of, 2858; resistance to, 2330; spread of, 158c, 460; symptoms of, 2123.
, *Sclerophoma pityophila* on, in Germany, association of with die-back, 1126.
semi mature-tissue needle blight, effect of on, 1171.
, smoke injury to, correlation between water relationships and, 1883.
, *Stereum sanguinolentum* on, 2941e; in Kenya, *1127, 3235; control, 3235; effect of nitrite on, 2863; factors affecting, 3235; mode of entry of, 3235; plantation litter as reservoir for, 1127; symptoms of, 1127.
, sulphur dioxide damage, effect of, on, 171.
, *Thelephora terrestris* on, in Brazil, 2848.
–, *Thyriopsis halepensis* on, in Canada, 158b.
, *Trichoderma* on, effect of nitrite on, 2863.
, — *viride* in seedbed soil of, isolation of, 165.
, — — on, effect of soil moisture on, 461.
, *Valsa sordida* on, non-inhibition of by actidione, 769.
- virus disease in Yugoslavia, symptoms of and transmission by (?)vectors, 2851.
Pineapple (*Ananas comosus*), *Cylindrocarpon effusum* on, in Mauritius, 2943b.
–, *Gibberella fujikuroi* var. *subglutinans* on, in Brazil, 2787.
–, *Penicillium funiculosum* on, 3634i.
–, *Pythium arrhenomanes* on, control, 3351.
–, virus diseases, incidence, mode of transmission and symptoms of, 2e.
inus, see Pine.
iper, *Cercospora* on, in Singapore, 1223.
– *aduncum*, *Phytophthora* on, in Jamaica, resistance to, 3158.
– *betle* virus disease in Malaya, symptoms of, 512b.
– *capense*, *Elsinoe piperis* on, *E.* on black pepper closely related to, 1680.
[*Piper*] *nigrum*, see Pepper, Black.
— *sarmentosum*, pepper mosaic virus can infect, 512b.
— — virus disease in Malaya, symptoms of, 512b.
Piricularia, see *Pyricularia*.
Pisolithus tinctorius on pine, forming mycorrhiza, 2979.
Pisonia brunoniana, *Phytophthora nicotianae* var. *parasitica* on, in Germany, introduced from abroad, 5o.
Pistacia vera, *Phyllosticta lentisci* on, in U.S.S.R., 3388.
Pisum sativum, see Pea.
Pithomyces chartarum, factors affecting growth and sporulation of in liquid surface culture, 547.
— — on *Bougainvillea glabra*, 267.
— — on wheat, 952.
— *maydicus*, factors affecting growth and sporulation of, in liquid surface culture, 547.
Pittosporum tenuifolium, mycorrhiza of, importance of in P uptake, 2380.
Planococcoides njalensis and *Planococcus citri* transmitting cacao mottle leaf and swollen shoot viruses, 1952.
Plant diseases in Africa, 1193c; Argentina, 3033; Asia, 1193c; Bengal (W.), 1509; Bulgaria, 1059; Canada, 3383; Chile, 1945b; Colombia, 3029; Finland, 917; Gabon, 1941; India, 1509; Japan, 1510, 1947, 1948; Korea, 236d; Mauritius, 3035; New S. Wales, 1944; Nigeria, 1943; Poland, 1176d; Queensland, 3030; Rhodesia, 2409; Sarawak, *1512, 3032; S. Africa, 1194; S. Pacific, 2410; South Vietnam, 3031; U.S.A., 2945i; U.S.S.R., 574, 1177, 1513; Yugoslavia, 1942; amino acids and, 516q; annotated index of in Canada and fungi recorded on plants in Alaska, Canada, and Greenland, 3383; application of serological methods to problems of, 1851b; biochemical problems of, 3, 1447; biology of, 1059; breeding against, 3385; Common names of economic in Japan, Vols. 1, 2, and 3, 1947; control, 1059, 1194, 2945i, 3031, 3035; by antibiotics of bacterial origin, 2595b; by chemical eradication of causal pathogen, 236k; by chemotherapy, 1431; in greenhouses, 514; development of assessment methods for, 231j; dissemination of by nematodes, 1950; effect of herbicides on, 2601; experimental procedures in, 2o; host index of, 3030; intercepted in U.S.A., 2976; isolation laboratory for, 843; lexicon of, 16; manual for home gardeners on, 1413; measurement of, 516b; regulation of metabolic pattern induced by, 3d; resistance to, 1851a.
— Diseases Division, New Zealand, activities and publications of, 3633b.
— galls, Tables for the identification of, in C. & N. Europe, 240.
— geopathology, 2952.
— immunity, biochemical and physiological background of, 2163.
— litter, micro-organisms in, decomposition of, 2185.
— material, hot water treatment for, 3036.
— parasite relationships, research on in Rumania, 1208.
— pathogens, control by active antimicrobial substances from marine algae, 2595d; terminology for, biotrophs and necrotrophs, 844.

[Plant] pathology, air pollution problems in, 516f; bibliography of, pp. 1, 113; First Israel Congress of, 1516; general importance and role of, in Western Europe, 2355a; host defence action in molecular, 3o; host-parasite relations in, 511, 577; in India, 577; physiology of host defence reaction in infectious diseases, 3p; review of modern problems and trends in, 1405; role of advisor in, 2162.
— protection in Africa, 2c; Austria, 1867; Europe, 1193a, 2353b; Germany, 1202, 1430, 1885; Pacific Region, 1514; Poland, 1176a, 1243; Surinam, 2c; U.S.S.R., 573; Vietnam, 2c; air pollution and review of, 1199; annual author index of Quebec Society for, 237; apparatus for, 1430; book on, 18; chemical methods of, 20; economic problems in, 1176a; equipment for, 1868; importance of disease forecasting in, 1858; integral, and biological foundation of, 2951; recent advances in, 1514; register of protectives and equipment, Austria, 1866; report concerning, to plant protection committee for S.E. Asia and Pacific Region, 1887, 2978.
— — and world crop production, book on, 3640.
Plants, cultivated, guide to the identification and control of diseases of [Rumanian], 1409.
—, The Oxford Book of Flowerless, 848.
Plasmodiophora brassicae on *Brassica rapa* var. *neosuguki*, 469.
— — on cabbage, see Cabbage.
— — on Chinese cabbage, 2335.
— — on Cruciferae, 3314.
— — on mustard, 3256.
— — on swede, 1773.
Plasmopara halstedii on *Helianthus*, 708.
— — on sunflower, 15131, 2085, 2487.
— *viticola* on vine, see Vine.
Plastic/asphalt laminates, treatment for fungus-proofing, 3337b.
Platanus occidentalis, *Corticium galactinum* on, 2834.
— —, *Ganoderma lucidum* on, in U.S.A., 1108.
Platinum salt, effect of on *Puccinia graminis* on wheat, 3049.
**Plenodomus destruens* on sweet potato, 1323.
Pleospora bjoerlingii on beet, see Beet.
— *herbarum*, effect of on growth of tomato, 2106.
— —, inhibiting seed germination, 1857.
— — on clover, 1027, 2765.
— — on *Gladiolus*, 2746.
— — on lucerne, 1027, 2765, 3121.
— —, sporogenic substances from, procedure to obtain, 255.
— *vulgaris* on wheat, 589.
Pleurotus ostreatus, C and N nutrition of, 3664.
— — on aspen, 762.
— — on oak, 3220.
— — on timber, 3241.
Plum (*Prunus domestica*), *Blumeriella jaapii* on, in Hungary, 375; Latvian S.S.R., 1849c; control, 375; overwintering of, 375.
—, cherry rasp leaf virus on, symptomless carrier of, 144.
—, *Dibotryon morbosum* on, popular account of biology, control and symptoms of, 1296.
— diseases, tables of fungicides against, 2171.
[Plum] line pattern virus, serology of, 3634.
— — — — on *Prunus*, 1644a.
— — — — + peach necrotic ring virus on *Prunus*, 1644a.
—, peach necrotic ring spot virus on, symptomless host of, 5k.
—, *Polystigma rubrum* on, genetics of and react. to, 1297.
— pox virus on plum, distribution of, 26[illegible] effect of rootstocks on manifestation 2776; historical account of, 2652a; legisla against in Sweden, 2377.
—, prune dwarf virus on, in Poland, 15[illegible] effect of, on, 5k.
—, *Pseudomonas mors-prunorum* on, in E land, 2354; type of, 2354a.
—, — *syringae* on, in Poland, factors affe and symptoms of, 1176g.
— sarka virus on plum in Poland, 1644a.
—, *Sclerotinia fructicola* on, in Japan, 24[illegible]
—, *Stereum purpureum* on, 672, 673a.
—, strawberry latent ring spot virus on England, 2354j.
—, *Tranzschelia pruni-spinosae* on, in Yu slavia, significance of aecidia, 1662.
—, *Valsa* on, 51; control, 2466; uptake o quinolinol solutions and pentachlorophen by, 688.
—, *Venturia carpophila* on, symptoms 2273.
PMA against *Pyricularia oryzae* on rice, 12[illegible] bulb treatment for *Narcissus*, 3466; as s treatment for wheat, 2689.
— constituent of semex, 2710.
—, toxicity of, to rice, 120.
— in combination against *Tilletia caries* and *foetida*, 3403.
PMC against *Venturia inaequalis*, 2263.
— in combination against *Plasmopara viticola*, *Sclerotinia fuckeliana*, and *Uncinula necator* on vine, 2155.
Poa, oat necrotic mottle virus can infect, 2219
—, *Puccinia striiformis* f.sp. *poae* on, differentiation of from *P. s.* f.sp. *tritici*, 2417.
— *compressa*, oat necrotic mottle virus infect, 1523.
— *palustris* mosaic virus on *P. palustris* Canada, symptoms of, 1627.
— *pratensis*, *Fusarium roseum* on, in U.S. 1023; factors affecting, 1023, 1630.
— —, *Helminthosporium vagans* on, fact affecting growth and sporulation of, 102
— —, oat necrotic mottle virus can inf 1523.
— —, *Puccinia striiformis* on, control, 28.
— —, — — f.sp. *poae* on, comparison of, v *P. s.* f.sp. *tritici* and f.sp. *dactylidis*, 2451.
— —, *Sclerotinia homoeocarpa* on, fact affecting, 1630.
— —, *Urocystis agropyri* on, control, 28.
— —, *Ustilago striiformis* on, control, 2251, 2452.
Pocket book for mushroom lovers, edition, 2634.
Podocarpus mycorrhiza, morphology and p siology of, 1843c.
Podosphaera clandestina on cherry, 3384.
— *leucotricha* on apple, see Apple.
— — on pear, 1294, 2270.
— —, ontogeny of ascocarp of, 560.
— *oxyacanthae* on cherry, 2173.
**Podosporiella verticillata* on grasses, 1944.
— — on wheat, 952.

Polyalthia longifolia, *Alternaria tenuissima* on, 355.
Polybarit against *Lophodermium pinastri* on pine, 1758.
Poly-carbacin against *Peronospora farinosa* on beet, 2558; *Plasmopara viticola*, 2589.
Polygonales, tobacco mosaic virus on, reaction to, 3015.
Polymicro-fertilizer PMU-7 as seed treatment for beet, 2556.
Polymycin as seed treatment for bean, 192.
Polymyxa betae on beet, 2131.
— *graminis* in barley and wheat roots, 2592o.
— — transmitting wheat mosaic virus, 662.
Polymyxin, effect of, on phytopathogenic bacteria, 2973.
—, inhibition of growth of cucumber and maize by, 2973.
Polyoxine against *Corticium sasakii* on rice, 235k.
Polyporaceae in N. America, 554.
Polyporus anceps on pine, 2847a.
— *balsameus* on *Abies balsamea*, 158b.
— *dryophyllus* on aspen and birch, 3214.
— *hirsutus* on birch, 3245.
— *hispidus* on walnut, 3581.
— *perennis* on sawdust, 2334.
— *schweinitzii* in soil, 3212a.
— —, intracellular polyphenoloxidases of, 1446.
— — on larch, 2527.
— — on pine, 1762.
— *sulphureus*, intracellular polyphenoloxidases of, 1446.
— — on *Abies gracilis*, birch, and larch, 2527.
— *tomentosus* on pine, 158b.
— — on spruce, 158b, 1133.
— — var. *circinatus* on pine, 3583.
— — — — on spruce, 2847c.
— *zonalis* on teak, 1178d.
— — on timber, 2543.
Polyram against *Cercospora beticola*, 3265; *Pseudoperonospora cubensis* on squash, 3300.
— 80 against *Venturia inaequalis*, 1180b.
— M & Z against *Peronospora tabacina*, 2519.
— combi against *Diplocarpon rosae* on rose, 2750.
— —, effect of, on *Alternaria dianthi* and *Fusarium oxysporum*, 3651.
Polystictus abietinus, non-occurrence of on pine and spruce poles, 3243.
— — on timber, 1768, 2853.
— *serialis* on timber, 2527.
— *triqueter* on spruce, 3239.
— *versicolor* on birch, 3245.
— — on sawdust, 1766.
— — on timber, see Timber.
— *zonatus* on birch, 3245.
— — on timber, 1768, 2527.
Polystigma rubrum on plum, 1297.
— —, *Trichothecium roseum* on, 3637.
Pomarsol as seed treatment for cotton, 1268.
— forte, see thiram.
Pome fruit, *Armillaria mellea* on, popular account of control and symptoms of, 2775.
— —, cold storage of virus indicator buds of, 3485.
— — diseases in Chile, 1945a; booklet on, 3480.
— fruits, *Valsa* on, in U.S.S.R., 1513q.
— — virus diseases in Poland, 1644.
Pomegranate (*Punica granatum*), *Phoma punicae* on, in India, *2079; properties of in culture, use of carbolineum as wound treatment for, 395.
*—, *Thielavia appendiculata* on, in India, 2079.
Poncirus trifoliata, non-occurrence of *Glomerella cingulata* on in Yugoslavia, 2724.
Poplar (*Populus*) [see also Aspen], *Aplanobacter populi* not isolated from, 2534, 2535.
—, — — on, in Britain, 1754; Germany, 2843; Netherlands, 162a; review of, 2843; role of leaf scars in infection by, 1754; slime production by, 2108; testing for resistance to, 440; var. react. to, 162a.
— bushy top virus on poplar in China, str. of tobacco mosaic virus, 1505.
—, *Cryptodiaporthe populea* on, in the Netherlands, 162a; control, 2841; factors affecting, 1345; relation to trunk scab, 1345, 2324; var. react. to, 162a.
—, *Drepanopeziza populorum* and *D. punctiformis* on, in Germany, spec. react. to, 2532.
—, *Erwinia* on, in Poland, aetiology of, 2535.
—, — *cancerogena* on, in Czechoslovakia, differentiation of, from other *Erwinia* spp., 2534.
*—, *Hypoxylon* on, in Czechoslovakia, resemblance of, to *H. pruinatum* in N. America, 2533.
—, *Inocybe boltoni* var. *ionipes* on, forming mycorrhiza, 40.
—, *Macrophoma tumefaciens* on, in Canada, 158d.
—, *Marssonina* on, 2369i; control, 451.
—, — *brunnea* on, in Italy, 450; the Netherlands, 162a; control, 3580; factors affecting, 450, 3580; immunity to, 162a; non-occurrence of, in England, 2108; symptoms of, 3580; var. react. to, 450.
—, — *populi-nigrae* on, 2108; in Netherlands, immunity to, 162a.
—, *Melampsora* on, in U.S.S.R., 1344; factors affecting dissemination of uredospores of, 2115; maintenance of pathogenicity of uredospores of, 758; var. and spec. react. to, 1344.
—, — *allii-populina* on, in U.S.S.R., 1337, 1343.
—, — *larici-populina* on, in Netherlands, 162a; U.S.S.R., 1343; fine surface structure of uredospores of, 3221.
— mosaic virus on poplar in Hungary, 1753; hosts of, 77; spread of, 3212c; symptoms of, 1753; technique for purifying, 3212c; (?)virus complex causing, 2108b; var. react. to, 1753.
— — — strs. A and B on poplar, 2840.
—, *Mycosphaerella* on, biology, distribution and morphology of, 3697a.
—, *Nectria galligena* on, in U.S.A., 2531.
—, *Pseudomonas* on, in Poland, aetiology of, 2535.
*—, — *rimaefaciens* on, in Poland, 1511.
—, — *syringae* on, in Britain, 1754.
—, *Sciapteron tabaniformis* on, *Pseudomonas* and *Erwinia* isolated from, 2535.
—, *Septoria populi* on, in U.S.S.R., 1337, 1343.
— trunk scab, aetiology of, 1345, 2324.
—, *Valsa nivea* on, in U.S.S.R., 449.
—, — *sordida* on, in U.S.S.R., 449, 1343; control, 449; effect of leaf diseases of, on susceptibility to, 1343; of phytoncides from bark and branches on, 2842.

Populus deltoides, Phomopsis macrospora on, in U.S.A., 2947f.
— *grandidentata*, see Aspen.
— *tremula* and *P. tremuloides*, see Aspen.
Poria expansa, distribution and ecology of, in C. Europe, 2635.
— *hypolateritia* on tea, 1721.
— *monticola* on timber, 2543.
— *obliqua* on aspen, 3214.
— — on birch, 2527, 3214.
— *vaporaria*, effect of acidity of artificial nutrients on development of, 1767.
— —, methods of concentrating and separating enzymes produced in cultures by, 173b.
— — on sawdust, 2334.
— — on timber, 2547.
— *weirii* on timber, 2546.
— —, selective N assimilation by, 2119.
Potassium deficiency in avocado pear, 3149; coconut, 3389; oil palm, 3389; strawberry, 3145; tomato, 2592s, 3208; vine, 504, 2931b.
—, effect of, on *Colletotrichum lindemuthianum* on *Phaseolus*, 2341; on forest trees, 1883; on green point galls in cacao, 2599f; on physiology and reaction of maize to *Diplodia maydis*, 604.
— nutrition of eggplant, 502.
— toxicity in vine, 2931b.
— permanganate against *Phytophthora capsici* on *Capsicum*, 829; as seed treatment for pine, 2327a; for tomato, 1737.
— salts, effect of on *Puccinia graminis* on wheat, 3049.
—, see also Fertilizers.
Potato (*Solanum tuberosum*), a survey of (Burton), 2nd edition, 2298.
— acropetal necrosis virus, see Potato virus Y str.
—, *Alternaria solani* on, control, 1077, 2809; variability in, 1923.
—, — *tenuis* on, factors affecting, 2498.
— Andean latent virus, resemblance of to turnip yellow mosaic group, serological relationships of, 78.
—, aster yellows virus on, in Canada, 1689; Guatemala, causing purple top, 2300.
— 'aucuba mosaic' virus on potato in Basutoland, 1686.
—, *Aureobasidium pullulans* on, factors affecting, 2498.
—, bacteria in rhizosphere of, antagonism of, to phytopathogenic fungi, 3004.
— blackheart, potato deep blackspot similar to, 1704.
—, *Botrytis cinerea* on, factors affecting, 2498.
— browning in U.S.A., 3182.
— breeding, papers on, U.S.S.R., 80, 81.
—, *Cercospora concors* on, in Mauritius, 2943b; Switzerland, 1846.
—, *Cladosporium herbarum* on, factors affecting, 2498.
—, clover phyllody virus on, (?)related to witches' broom virus, 2660; transmission of by vectors, 2660.
— coiled sprout, effect of soil compaction on incidence of, 2813; *Verticillium nubilum* associated with, 2813.
—, *Colletotrichum coccodes* on, 186; in India, 3180; U.S.S.R., 2093; pathogenicity of, 3180.
—, — *dematium* on, 186.
— corky ringspot, tobacco rattle virus causing, 572.
[Potato], *Corticium solani* on, 1404c, 1681, 238
in Canada, 1180a; India, 1696; Irish Republi
1081; Poland, 1176h; artificial production
perfect state of, 1697; biological contr
3682; control, 1176h, 1180a, 1695, 249
2810; effect of captan and dichlone o
1180a; of haulm destruction on, 331
factors affecting, 1696, 2810; popular acco
of host range and symptoms of, 281
prevalence of, 2939e; var. react. to, 1081.
—, *Corynebacterium sepedonicum* on, in Port
gal, 1702; effect of glycoalkaloids on, 72
of pH on, 1319; of soil temp. on, 3551;
time of harvesting on, 2504; factors affecti
1180c; nutritional requirements of, 118
serology of, 1318; technique for screeni
bactericides against, 11f.
— 'deep blackspot', similarity of to blackhe
1704.
— degeneration in U.S.S.R., 81, 713; causes o
713; effect of high temp. on, 3538; of sum
planting on, 81.
— diseases in U.S.S.R., 575, 918; popul
survey of, 1681.
—, *Erwinia aroideae* on, in Rumania, 4
control, 416, 3552; factors affecting, 35
serology of, 1318.
—, — *atroseptica* on, in Egypt, imported fro
Ireland, 2814; Irish Republic, 1083; R
mania, 416; U.S.S.R., 1682; control, 4
1682, 3552; detection of, 1703; early hist
of, 1083; factors affecting, 150, 2304, 35
serology of, 1318.
—, — *carotovora* on, in Germany, 184
Rumania, 416; control, 416, 3552; facto
affecting, 1844, 3552; phenolic compounds
relation to, 402c, 3553; serology of, 1318.
— fungal diseases, survey of, on seed tubers o
2592n.
—, fungi in rhizosphere of, antagonism of,
phytopathogenic fungi, 3004.
—, *Fusarium* on, effect of gibberellic acid an
gibberellin derivatives on, 2095; facto
affecting, 2498.
—, — *caeruleum* on, 3181; control, 280
transmission of, 3629b.
—, — *oxysporum* on, control and effect of, 209
—, — — f.sp. *tuberosi* on, effect of temp. o
in storage, 402a.
—, *Gibberella fujikuroi* on, effect of gibberell
acid and gibberellin derivatives on, 2095.
—, — *zeae* on, effect of, on permeability
tuber tissue, 3549.
— gothic virus on potato in U.S.S.R., 71
2492; detection of, 2492; effect of, on resi
tance to scab, 713; incidence of, 249
potato viruses K and X associated with, 713.
— growing in Venezuela, phytopathologic
problems in, 3166.
—, *Helminthosporium solani* on, in Canad
seed tubers as source of infection, 1080.
— injury, mechanical, effect of, on tuber
1847b, c.
— internal brown spot in Pakistan, 1320.
— latent virus diseases, effect of, on growth
quality, and yield of, 3169.
— leaf drop streak, potato virus X str. causing
1492n.
— — roll virus on *Datura stramonium*, 403.
— — — — on *Physalis floridana*, 75a, 40
climate chamber for testing, 3175.
— — — — on potato, 1681, 2094; in Chil
1072; Germany, 6; U.A.R., 714; U.S.A.

1310; control, 714, 715; by meristem culture, 1072; effect of, on, 1310; on tuberisation, 1070; on yield, 6; factors affecting, 1684; methods for assessing incidence of, 2491; transmission of, by vectors, 2799; var. react. to, 6, 406, 714.
Potato leaf roll virus] str. on potato, detection of, 3174.
— — rolling mosaic virus on potato in U.S.S.R., effect of, on resistance to scab, 713.
—, manganese toxicity in, in Greece, 1911.
— mild mosaic + tobacco mosaic viruses on tomato, 1331.
— mop top virus on potato, previously referred to as spraing, 4c; review of, 3541; symptoms of, 3630b; resembling tobacco rattle virus, 4c, 409; transmission of, by sap and *Spongospora subterranea*, 409; var. react. to, 3630b.
— mosaic virus on potato, factors affecting, 1684.
— mottle mosaic virus on potato in U.S.S.R., 713.
— mottling and necrotic mosaic viruses on potato, factors affecting, 1684.
—, *Oospora pustulans* on, control, 1316, 3629e; elimination of by propagation by stem cuttings, 4b.
—, *Pellicularia filamentosa* on, production of perfect state of, 1697.
—, *Phoma foveata* on, control, 3548; growth and establishment of, on tuber surface, 3311d.
—, — *solanicola* on, in N. Ireland, 4a, 3630a; pigment produced by, 4a; popular account of, 1317.
—, — — var. *foveata* on in N. Ireland, 3630a; stem infection by, 2811; transmission of, 3629b.
—, *Phytophthora erythroseptica* on, 2092.
—, — *infestans* on, 2092, 3629c; in Canada, 1180f; Finland, 720, 3177, 3314; Germany, 6, 1844; Great Britain, 3176; Guatemala, 2300; Poland, 1176i, 1242, 2597; U.S.S.R., 1513m, 2804, 2805, 3178, 3545; biometeorology and epidemiology of, 719; breeding against, 80a, b; control, 230j,k, 231i, 2369d, 2592m, 2800, 2939a, 2964, 3176, 3177; development of susceptibility to, 2501; distribution of, 2597; of C^{14} in relation to, 415; dose response for infection of leaves by zoospores, 1074; effect of Cu residues in soil on, 1075; of fungicide sprays on gradients of, 2592q; of latent infections of pathogenic fungi on entry of, 2498; of phosphate on resistance to, 1692; of phytoncides on, 2803; of quintozene and S on, 149; of soil-ridge treatments against, 2592t; of time of haulm destruction on, 3629d; of toxin from, on phenolic compounds in, 1076; of, on tetrazolium reductase activity in, 2161j; of, on tubers, 1847c; evaluation of interspecific hybrids for resistance to, 80c; factors affecting, 1844, 3314; epidemics of, 720; forecasting outbreaks of, 412, 413, 1180f, 1242, 2592; host-pathogen relations in, 3n; hypersensitive reaction to races of, 414, 3179; incidence of, 1844; inhibition of growth of by difolatan residues in soil, 1075; interaction between tissues and, 1180d; lab. assessment of resistance to, 2502, 2801; N and N compounds in, 573g; physiologic races of, 1847f, 2804, 2805, 3178, 3545; preservation of conidia in soil, 2802; resistance to, 2209; peroxidase activity and, 1693; restoration of virulence of stored cultures of, 3543; revised leaflet Min.Agric. & Fish. on, 3542; role of indole-acetic acid in pathogenesis, 3544a,b; of phenolic compounds in resistance to, 1847d, 2500; of water in spread of, 2302a; susceptibility of tubers to, 2302b; technique for inducing premunity in, 539; toxins and enzymes of, 1847e; var.react. to, 3r, 1074, 1694, 3177, 3546.
[Potato], *Pseudomonas solanacearum* on, 1404c; in Colombia, virulence of, 2785; Portugal, 1702.
— rugose mosaic virus on potato in U.S.S.R., 713; factors affecting, 1684.
—, *Sclerotium rolfsii* on, basidial formation by, 67, 885b, 2670.
— seed production in Germany, 2299; U.A.R., 714.
—, *Septoria* on, in Venezuela, 3547.
— spindle sprout, aetiology of, 1690; warm water treatment of tubers causing, 1321.
— — tuber virus on potato in U.S.A., 1310; electron microscopy of, 13b; properties of, 410; purification of, 13b; serologically unrelated to potato virus X, 2797; tomato as indicator for, 410.
— — — — on tomato, 2797.
— — — — + potato viruses X and Y on tomato, 410.
—, *Spongospora subterranea* on, in Germany, 1844.
—, *Sporobolomyces* on, factors affecting, 2498.
— spraing in Irish Republic, symptoms of, 2301; potato mop top virus symptoms resembling, 4c, 409.
—, stolbur virus on, 717, 1492k; in Czechoslovakia, 2496; *Turkey, 717; U.S.S.R., 713; causing spindle sprouting, 1690, 1691; hosts of, 717; potato viruses K and X associated with, 713; var. react. to, 717.
— storage disorders, 402a.
— streak mosaic in U.S.S.R., viruses associated with, 713, 1685.
—, *Streptomyces* on, 1681.
—, — *scabies* on, 3629a; in Germany, 1701; Irish Republic, 1081; Poland, 1176h; control, 149, 1176h; effect of Cu on, 2503; of $MnSO_4$ on, 722; of soil moisture on, 1082; of timing of irrigation on, 3550; of Zn on, 2503; importance of local factors in infection by, 1701; var. react. to, 1081.
—, *Synchytrium endobioticum* on, in Finland, 917, 3314; India, 1403a; Sweden, 2497; U.S.S.R., 1513n; biochemical resistance to, 1847g; breeding against, 81; control, 721, 2497; effect of gamma radiation on, 2807; of growth-stimulating compounds on viability of, 2808; factors affecting, 2496; physiologic races of, 1699, 1700; resistance to, 3t; revised leaflet on, 721; var. react. to, 1699, 1700.
—, tobacco mosaic virus on, transmission of, by grafting, 148.
—, — — — str. pp on, hosts, symptoms, and properties of, 3540.
—, — necrosis virus on, in N. Ireland, 4e; review of, 3541.
—, — rattle virus on, 1681; in N. Ireland, 4d; causing corky ringspot, 572; review of, 3541.

[Potato], tomato black ring virus on, review of, 3541.
—, turnip mild yellows virus on, in Europe and N. America, 2592i.
—, *Verticillium alboatrum* on, in Canada, 1079; U.S.S.R., 1078; Victoria, 2303; control, 1698; correlation of photoperiod with tuberization and susceptibility to, 2812; popular account of, 2303; taxonomy of, 1078; var. react. to, 1079, 2792.
—, — *dahliae* on, in Israel, 1905; U.S.S.R., taxonomy of, 1078.
— virus diseases in Bulgaria, 1068; Great Britain, 3167; Latvia, 1683; Netherlands, 2490; U.S.A., 1310; U.S.S.R., 236a, 1177, 1682, 2488; breeding against, 1068; control, 1682, 1928, 3018; diagnosis and distribution of, 2488; economic importance of, 3018; effect of growth inhibitors on, 2490; factors affecting, 1684; immunity from, 3387; inhibition of, 2796; method for obtaining virus-free clones of, 72, 3167; for physiologico-chemical diagnosis of in tubers, 2489; review of, 1311, 3541; symptoms of, 1681; transmission of by vectors, 1311.
— — on potato in Chile, hosts, transmission of by vectors, 1073.
— — A on potato in Chile, 5f; Spain, 3168; U.A.R., 714; breeding against, 80a; control, 714; regeneration of, 3168; var. react. to, 714.
— — F on potato in U.S.S.R., 716; size and shape of particles of, 2091.
— — K on potato in U.S.S.R., 713, 716; associated with gothic, stolbur, and streak mosaic viruses, 713; effect of high temp. on, 3538.
— — M on plants, 3539.
— — — on potato in *Bulgaria, 1069; Chile, 1072; Latvia, 1683; antisera for diagnosing, 3020; control, 1069; by meristem culture, 1072; detection of by bentonite flocculation test, 1687; introduction of in wild potatoes, 5f; symptoms of, 1069.
— — — on tomato, 1503.
— virus M + S + X on potato in Latvia, 1683.
— virus N, comparison of potato virus NR with, 1313.
— — NR on *Nicotiana rustica*, 1313.
— — S on plants, 3539.
— — — on potato in Basutoland, 1686; Chile, 1072; U.S.S.R., 716; antisera for diagnosing, 3020; breeding against, 80a; control by meristem culture, 1072; detection of by bentonite flocculation test, 1687; effect of altitude on, 1312; of high temp. on, 3538; effect of, on growth, quality, and yield of, 402b, 3169; inhibition of by leaf sap substances, 2796; methods for assessing incidence of, 2491; serological detection of, 407; size and shape of particles of, 2091; translocation of, 2493; var. react. to, 2493.
— — X, comparison of, with *Narcissus* mosaic virus, 3380; electron microscope study of, 911; identification of, 74.
— — — on *Amaranthus*, *Atropa belladonna*, and *Chenopodium album*, 404.
— — — on cucumber, 914.
— — — on *Gomphrena globosa*, 146, 2205.
— — — on *Nicotiana glutinosa*, 146, 911.
— — — on potato in Basutoland, 1686; Chile, 1072; Spain, 3168; U.S.A., 1310; U.S.S.R., 713; associated with gothic, stolbur and streak mosaic viruses, 713; breeding against, 80a; control by meristem culture, 1072; detection of, by bentonite flocculation test, 1687; effect of altitude on virus accumulation in, 1312; of early harvesting of unripe tubers on, 147; of high temp. on, 3538; of ultrasonic treatment of infectivity, 2594f; effect of, on growth and quality, 402b, 3169; on yield, 402b, 1310, 3169; eradication of by thermotherapy, 3537; inhibition of by leaf sap substances, 1071a, 2796; method for assessing incidence of, 2491; for producing roots free from infection, 718; regeneration of, 3168; relationship of peroxidase activity to severity of symptoms, 3703; serological detection of, 73, 407, 3020, 3171; serological determination of inhibitor in sap, 1071b; serological relationships of, 2592d, 2797; size and shape of particles of, 2091; technique for purifying, 3170.
[Potato virus X] on *Sisymbrium*, 404.
— — — on *Solanum*, 1067.
— — — on tobacco, 571.
— — — on tomato, 278, 741, 914.
— — — str. on potato, causing leafdrop streak, 1492n.
— — — + S on potato in India, 1178a; effect of on growth, quality, and yield of, 402b.
— — — + tobacco mosaic virus on tomato, 279, 1739, 3201.
— — — + Y on potato in U.S.S.R., 716.
— — — + — on *Solanum indigena*, 405.
— — — + — on tobacco, 2405.
— — Y on *Capsicum*, 1504, 2350, 2926, 3303, 3616.
— — — on *Chenopodium quinoa*, 1314a.
— — — on potato in Basutoland, 1686; Chile, 5f, 1072; Israel, 2798; Latvia, 1683; U.A.R., 714; U.S.S.R., 716; control, 714; by meristem culture, 1072; effect of, on protein content, 2495; on yield, 3169; identification of, 74; inhibition of by leaf sap substances, 2796; methods for assessing incidence of, 2491; properties and purification of, 1314b; relationship of peroxidase activity to severity of symptoms, 3703; screening for resistance to, 2494; serological detection of, 407, 3020, 3171; size and shape of particles of, 2091; spread of in relation to aphid population trends, 2798; var. react. to, 406, 714.
— — — on tobacco, 734, 1724, 2509, 3381.
— — —, tobacco veinbanding mosaic virus serologically unrelated to, 3559.
— — — mild str. on *Capsicum*, 1504.
— — — necrotic str. on potato in Basutoland, 1686; technique for estimating, 3172.
— — — — on tobacco, 1730.
— — — str. on *Capsicum*, *Datura stramonium* var. *tatula*, and *Lycopersicon pimpinellifolium*, 1688.
— — — str. C on tobacco, 408.
— — — str. R on tobacco, 3173.
— — — strs. on *Capsicum*, 2582.
— — — — on tobacco, 2652a.
— — — tobacco vein browning str. on potato, symptoms of, 1315.
— — — + cucumber mosaic virus on tobacco, 2509.
— — — + X on tobacco, 2405.
— witches' broom virus, clover phyllody virus (?)related to, 2660.
— — — — on clover and lucerne, 2660.

)tato witches' broom virus] on *Nicotiana glutinosa*, 1240.
— — — — on potato in Bulgaria, symptoms of, 1069; transmission of by vectors, 2660.
— — — — on tomato, 1240.
yellow dwarf virus on clover and *Nicotiana rustica*, 411.
atylenchus penetrans in relation to *Fusarium oxysporum* on lucerne, 2768; *Trichoderma viride* on celery and lucerne, 892.
rimula acaulis, *Phyllosticta primulicola* on, in Czechoslovakia, 3355.
malacoides, *Centrospora acerina* on, in W. Germany, 5n.
obconica, tobacco necrosis virus on, similarity of isolate from cucumber to, 2918.
imulales, tobacco mosaic virus on, reaction to, 3015.
ivet (*Ligustrum*) line pattern virus disease in Denmark, 510d.
yellow spot virus, *Robinia* mosaic virus not related to, 1346.
oceedings, see Conferences.
oceras indicus, *Aspergillus flavus* on, in India, 524.
otomyces macrosporus on Umbelliferae, 3360.
une (*Prunus domestica*) dwarf virus, (?)apricot gummosis virus str. of, 1042; serological detection of, 690.
— — on cherry, 5k, *3507.
— — on peach, 5k.
— — on plum, 5k, 1644a.
— — on squash, 3382.
-, see also Plum.
runus as indicator for cherry leaf roll virus, 692.
-, ash ringspot virus can infect, 1109.
-, fungi on, effect of gamma radiation and heat on, 2465.
- necrotic ringspot virus, see Peach necrotic ringspot virus.
-, peach necrotic ringspot virus on, in Poland, 1644a.
-, — wart virus can infect, 1043.
-, plum line pattern virus on, in Poland, 1644a.
-, *Rhizopus stolonifer* on, effect of gamma radiation and heat on, 2465.
- virus diseases, non-transmission of to citrus by budding, 1237.
- *amygdalus*, see Almond.
- *armeniaca*, see Apricot.
- *avium*, see Cherry.
- *besseyi*, effect of peach viruses on growth of, 1659.
- *cerasifera*, bacterium on, intermediate between *Pseudomonas mors-prunorum* and *P. syringae*, 2281.
- *cerasus*, see Cherry.
- *divaricata*, *Blumeriella jaapii* on, in Latvian S.S.R., 1849c.
- *domestica*, see Prune and Plum.
— — var. *italica*, see Greengage.
- *insititia*, see Damson.
- *laurocerasus*, see Cherry laurel.
- *mahaleb*, *Blumeriella jaapii* on, in Latvian S.S.R., 1849c.
- *padus*, density of associated with *Puccinia-strum padi* on spruce, 2331.
- *persica*, see Nectarine, Peach.
- *tomentosa*, effect of peach viruses on growth of, 1659.
[*Prunus tomentosa*], *Sambucus nigra* 'Aurea' virus can infect, 3634d.
— *virginiana*, peach western X-disease virus on, transmission of, 693.
— —, *Sambucus nigra* 'Aurea' virus can infect, 3634d.
Psammotettix alienus, transmitting wheat dwarf virus, 955, 3044.
— *provincialis* not transmitting wheat 'bright yellow mosaic stripe', 3044.
— — transmitting wheat striate mosaic virus, 3044.
Pseudomonas alliicola on onion, 2600i, 2911.
*— *caryophylli* on carnation, 3461.
*— *cepacia* on onion, 2600i, 3384.
— *cerasi* on stone fruit trees, 3509.
— *cichorii* on Araceae, 3116.
— — on *Chrysanthemum*, 345, 3116.
— — on endive and *Scindapsus*, 3116.
— *coronafaciens* on *Festuca*, 508c.
— — on oats, 2940a.
— *eriobotryae* on loquat, 11f.
— *fabae*, hosts of, 486.
— *fluorescens*, antagonism of, to phytopathogenic fungi, 3004.
— —, effect of on tobacco mosaic virus on tobacco, 423.
— — on *Antirrhinum*, 2440.
— *glycinea* on soybean, see Soybean.
— *holci* on maize, 2940a.
— *lachrymans*, C.M.I. description of, 2960.
— — on cucumber, see Cucumber.
*— *lapsa* on maize, 2004, 3632b.
— *lupini* on lupin, 3125.
*— *maculicola* on cauliflower, 2338.
— *marginalis* on lettuce, 1404d.
— — on onion, 2600i.
— —, pectic enzymes of, 1424.
*— *mori* on mulberry, 1863, 3510.
— *mors-prunorum*, C.M.I. description of, 2960.
— — on cherry, see Cherry.
— — on pear, 2064.
— — on plum, 2354a.
— —, pathotype and lysotype of Italian isolates of, 522.
— —, relationship of *P. syringae* to, 3501.
— *panici* on *Panicum miliaceum*, 2940a.
— *phaseolicola*, bacterium on *Glycine javanica* tentatively identified as, 2942.
— — on bean, see Bean.
*— — on *Glycine javanica*, 2357b.
— —, technique for detecting, 1181.
(?)— *pini* on pine, 3236.
— *pisi*, C.M.I. description of, 2960.
— —, resemblance of symptoms of *P. syringae* on pea to, 13p.
— —, technique for detecting, 1181.
— *radiciperda* on lentil, 2347.
*— *rimaefaciens* on poplar, 1511.
— *rubrilineans*, C.M.I. description of, 2960.
— *savastanoi* on *Forsythia intermedia*, 1611.
— — on olive, 1058.
— *solanacearum* in soil, 1862.
— —, inhibition of, by streptocycline, 1197.
— — on banana, 235a, 243, 2785.
— — on *Capsicum*, 1941.
— — on eggplant, 1179, 1941, 2596.
— — on groundnut, 809.
— — on potato, 1404c, 1702.
— — on Solanaceae, 243.
— — on tobacco, 2358c.
— — on tomato, see Tomato.
— —, pectolytic activity in, 3643.

[*Pseudomonas*] *sorghicola* on sorghum, 3632e.
— *syringae*, effect of on tobacco mosaic virus, 1728.
— —, hosts of, 1176g.
— — on apple, 3501.
— — on apricot, 2273.
— — on cherry, 1045.
— — on citrus, 323.
— — on clover, 362.
*— — on *Cyamopsis psoraloides*, 2140.
— — on maize, 2708.
— — on pea, 13p.
— — on pear, 234, 1422, 3501.
— — on *Phaseolus*, 13p.
— — on plum, 2354a.
— — on poplar, 1754.
(?)— — on raspberry, 3384.
— — on stone fruit, 2273.
— — on tobacco, 2168.
— — on *Vaccinium*, 1046.
— —, pathotype and lysotype of Italian isolates of, 522.
— —, technique for detecting, 1181.
— *tabaci* against *Erwinia amylovora* on apple, 1656.
— —, C.M.I. description of, 2960.
— — on soybean, 2899.
— — on tobacco, see Tobacco.
(?)— *tagetis* on *Tagetes erecta*, 2446.
— *tomato* on tomato, 439.
*— *wieringae* on beet, 1141.
(?)— *woodsii* on carnation, 1607.
— *xanthochlora* on lupin, 3125.
**Pseudonectria pachysandricola* on *Pachysandra*, 5n.
Pseudoperonospora cubensis on cucumber, 1224.
— — on melon, 1224, 1941.
— — on squash, 3300.
— *humuli* in the air over hop fields, 3523.
— — on hop, see Hop.
Pseudopeziza medicaginis on lucerne, 1639, 2940b, 3034.
— *ribis* on currant, see Currant.
— — on gooseberry, 3143.
— *tracheiphila* on vine, 1513t, 2158.
Pseudotsuga menziesii, *Astraeus pteridis* and *Boletus subolivaceus* on, forming mycorrhiza, anatomy and morphology of, 2981.
— —, *Botrytis cinerea* on, in Canada, effect of temp. on, 1128.
— —, *Fomes annosus* on, in Canada, spore deposition of, 1129.
— —, *Hebeloma crustuliniforme* on, forming mycorrhiza, anatomy and morphology of, 2981.
— —, *Rhabdocline pseudotsugae* on, technique for staining mycelium of, 172.
— —, *Rhizopogon colossus* on, forming mycorrhiza, anatomy and morphology of, 2981.
— —, *Scirrhia pini* on, 2860.
Psidium guajava, see Guava.
Psilocybe panaeoliformis, initiation of pinheads in, 2928.
PSP 112 and PSP 204 against vectors of potato leaf roll virus, 715.
Pterandrus rosa associated with *Penicillium digitatum* on citrus, 3441.
Pteridium aquilinum, *Botrytis cinerea*, and *Pythium debaryanum* on, effect of griseofulvin on, 2176.
— —, effect of volatile fungal metabolites on gametophytes of, 3347.
Puccinia antirrhini, factors affecting development of, 3667.
— — on *Antirrhinum*, see *Antirrhinum*.
— *asparagi* on *Asparagus officinalis*, garlic, and onion, 3294.
— *carthami* on *Carthamus*, 3529b.
— — on safflower, 3528, 3529a.
— *chrysanthemi* on *Chrysanthemum*, 643.
— *coronata* on *Lolium perenne*, 3118.
— — on oats, see Oats.
— — on *Rhamnus cathartica*, 965.
— *cynodontis* on *Cynodon dactylon*, 2450.
— *erianthi* on sugarcane, 3557.
— *glumarum*, see *P. striiformis*.
— *graminis*, aggressiveness of physiologic races of, 1961.
— —, culture of on artificial medium, 2214.
— —, factors affecting development of, 366
— —, FC as carrier for spores of in inoculation studies, 3042.
— —, germination of uredospores of, metabolism in, 1964; on cellophane paper, 12
— — on barley, see Barley.
— — on cereals, 582, 2209, 2356.
— — on grasses, 1531.
— — on oats, see Oats.
— — on *Phleum*, 1024.
— — on rye, 1960, 2677.
— — on wheat, see Wheat.
— —, qualitative biochemical variations in uredospores of, 3668.
— —, storage of uredospores of, 1527, 221
— *helianthi*, factors affecting development of, 3667.
— — on sunflower, 2161i, 2943c.
— *hordei* on barley, see Barley.
— *horiana* on *Chrysanthemum*, 1201a, 24
3631.
— *iridis* f.sp. *florideanum* on *Iris*, 3635d.
— *kuehnii* on sugarcane, 1179.
*— *lagenophorae* on cineraria, 4f.
— *lobata* on hollyhock, 1275.
— *malvacearum*, differentiation of *P. lobe* from, 1275.
— *menthae* on *Mentha*, 2392, 3033.
— — on *M. cardiaca* and *M. spicata*, 2084.
— *parthenii* on *Parthenium argentatum*, 355
— *pelargonii-zonalis* on *Pelargonium*, see *Pelargonium*.
*— *pentadicola* on *Pentas lanceolata*, 2943c.
— *pimpinella* on anise, 3033.
— *polysora* on maize, see Maize.
— *psidii* on pimento, 2599.
— *purpurea*, effect of *Streptomyces griseus* on, 1853.
— *recondita* on cereals, 582; physiologic specialization in, 88b.
— — on rye, 310, 972, 1513d.
— — on wheat, see Wheat.
— *sorghi* on maize, see Maize.
— — on *Oxalis*, 3413.
— —, qualitative biochemical variations in uredospores of, 3668.
— *striiformis* in Mongolia, 2392.
— — on barley, see Barley.
— — on cereals, 582; genetics, infection, and physiologic specialization of, 88a.
— — on *Poa pratensis*, 28.
— — on wheat, see Wheat.
— — f.sp. *dactylidis* on *Dactylis glomerata*, 2451.
— — — *poae* on *Poa*, 2417.
— — — — on *P. pratensis*, 2451.

uccinia] *triseti*, see *P. recondita*.
- *triticina*, see *P. recondita*.
- *zoysiae* on *Zoysia*, 665, 1026a,b, 2945a.
ucciniastrum epilobii on *Abies balsamea*, 158c.
- *padi* on spruce, 2331.
ulpwood, bacteria and fungi on, bibliography and review of, 1770.
umpkin (*Cucurbita pepo*), bacteria in rhizosphere of, 888.
-, cucumber mosaic virus on, in Germany, 1823.
-, *Cunninghamella* on, overwintering of, 819.
-, fungi in rhizosphere of, 888.
- mosaic virus, comparative studies of squash mosaic virus and, 13n.
-, tobacco rattle and tomato black ring viruses on, in Germany, 1823.
- virus on pumpkin in Germany, 1823.
-, watermelon mosaic virus on, formation of cell inclusion bodies in, 1394.
unica granatum, see Pomegranate.
VC, effect of on redistribution of Cu oxychloride and zineb on apple, 3128.
ycnoporus coccineus on timber, 2125.
yrenochaeta lycopersici on melon and tomato, 437, 2596.
– *terrestris*, mannitol production by, 210.
– — on onion, 155, 209, 1808.
yrenomycetes, spore discharge in, 1215.
yrenopeziza medicaginis on lucerne, 2770.
yrenophora avenae on oats, *1242, 1550, 2594g, 3631.
– *graminea* on barley, see Barley.
– *semeniperda* on cereals and grasses, 925.
– *teres* on barley, 962, 3409.
– — on oats, 917.
– *tritici-repentis* on wheat, 7, 3631.
yricularia grisea on *Stenotaphrum secundatum*, 2945c.
– *oryzae*, inhibition of in culture by bacteria on rice leaves, 992b.
– — on rice, see Rice.
– —, resistance of to sevin, 860.
– —, toxicity of alkylphenols to, 3329.
*– *setariae* on *Setaria italica*, 2010.
Pyridine nitro derivatives, fungicidal activity of, 532.
Pyronia veitchii as indicator for latent pear viruses, 2063.
Pyrus, pear blister canker on, effect of on compatibility and growth of, 2063.
–, — green ring mosaic virus on, transmission of, mechanically, 2268.
–, — ring pattern mosaic virus and pear vein yellows/red mottle virus on, effect of, on compatibility and growth of, 2063.
Pyrus communis Kew str. as indicator for pear viruses, 2063.
— —, see also Pear.
Pythium, C.M.I. description of 5 spp., 3008.
— *acanthicum* on pine, 1353a.
— *aphanidermatum*, effect of N sources on growth of, 881, 2621; of nystatin on growth of, 2180.
— — in soil, 259, 1854a, 2599g, 2628.
— — on *Agrostis palustris*, 2050.
— — on bean, 3274.
— — on cabbage, 782.
*— — on maize, 512a.
— — on *Phaseolus aureus*, 3599.
— — on rice straw, 259.
— —, pectic enzymes of, 3342.
[*Pythium aphanidermatum*], serological differentiation of, from *Phytophthora nicotianae* and *P. n.* var. *parasitica*, 1921.
— *arrhenomanes* in soil, 3351.
— — on maize, 83, 118, 236h.
— — on pineapple, 3351.
— — on sorghum, 987.
— — on sugarcane, 83, 2818.
— *butleri*, chemical composition of hyphal wall of, 2994.
— —, effect of amino and organic acids on sexual reproduction of, 2182.
— *catenulatum* on sugarcane, 2818.
— *debaryanum*, antagonism of soil bacteria and fungi to, 3004.
— —, cell wall structure of, 3677.
— — on beet, 1784b.
— — on clover, 2763.
— — on *Fuchsia*, 3460a.
— — on pine, 1106, 2539.
— — on *Pteridium aquilinum*, 2176.
— — on sorghum, 987.
— — on tulip, 3460b.
— —, source of food for *Aphelenchus avenae*, 2524.
— —, stimulation of growth of, by *Corticium solani* and *Fusarium culmorum*, 59.
— *dissotocum* on peach, 1044.
— *graminicola* on sorghum, 987.
— —, technique for detecting antibiotic-producing micro-organisms against, 2650.
— *irregulare*, not controlled by terramycin, 5i.
*— — on beet, 1139.
— — on Coniferae, 3226.
— — on peach, 1044.
— *mamillatum* on Coniferae, 3226.
— — on sugarcane, 2818.
— *middletonii*, technique for obtaining zoospores in, 3365.
— *myriotylum* on groundnut, 204, 3286, (?)3287.
— *oligandrum*, interactions of, with other fungi, on cellulose film, 59.
— *paroecandrum* on pine, 1106.
— *ultimum*, effect of N sources on growth of, 2621; of, on *Fusarium oxysporum* f.sp. *pisi* on pea, 10d.
— —, fine structure of growth zone in hyphal tips of, 2948c.
— —, Golgi apparatus as site of endomembrane differentiation in, 2948d.
— — in soil, 57.
— — on *Agrostis tenuis*, 1630.
— — on beet, 182, 787.
— — on *Chrysanthemum*, 1175e.
— — on Coniferae, 3226.
— — on cucumber, 1395, 1849q.
— — on *Parthenium argentatum*, 3554.
— — on pine, 1106, 3587.
— —, stimulation of growth of by *Corticium solani* and *Fusarium culmorum*, 59.
— — + cucumber mosaic virus on cucumber, 1395.
— *vexans* in pine seedbed soil, 165.
— — on peach, 1044.

Quercus, see Oak.
Quexi against *Puccinia pelargonii-zonalis* on *Pelargonium*, 1620.
—, toxicity of to *Pelargonium*, 1620.
Quince (*Cydonia oblonga*) sooty ring spot and stunt viruses on pear, 1293.

Quinoline nitro derivatives, fungicidal activity of, 532.
Quinosol against *Botrytis cinerea* on vine, 3309.
—, fungicidal activity of, 532.
Quintozene against *Botrytis cinerea* on lettuce, 5a; *Corticium solani*, 838; on potato, 1176h; *Fomes lignosus* on *Hevea* rubber, 1089a, 1705; *Plasmodiophora brassicae* on cabbage, 2869; *Sclerotinia minor* on lettuce, 58c; *Sclerotium cepivorum* on garlic, 3293; *S. rolfsii* on groundnut, 808, 2211, 2906; *Streptomyces scabies* on potato, 149, 1176h; as bulb treatment for lily, 1277; as seed treatment for beet, 184; as soil disinfectant, 58c, 193b, 550a, 651, 1180a, 1695.
—, effect of, on *Corticium solani* in soil, 57; on lettuce, 58c; on *Phytophthora infestans* on potato, 149; on *Pythium ultimum* in soil, 57; on soil micro-organisms, 1468.
—, inhibition of *Curvularia eragrostidis* and *Marasmius palmivorus* by, 3536.
— versus dichloronitroaniline and thiabendazol, 838; dicloran, 3293.
— in combination as seed treatment for beet, 184; for cotton, 1268, 3457; for wheat, 2600b; as soil disinfectant, 193b.
— in combination versus chloroneb, 3457.

Rabcon against *Pyricularia oryzae*, 235k.
Radiation, effect of, on biological properties of *Xanthomonas gorlencovianum* on tea, 1723; on susceptibility of apple to *Podosphaera leucotricha*, 1031.
Radicicol and radicicolin, production of by *Cylindrocarpon radicicola*, 1196.
Radish (*Raphanus sativus*), *Agrobacterium tumefaciens* on, effect of on development of antibacterial substances in, 2177.
—, *Albugo candida* on, anaerobic metabolism and photosynthesis in, 468.
—, *Corynebacterium flaccumfaciens* on, effect of on development of antibacterial substances in, 2177.
—, *Fusarium oxysporum* f.sp. *conglutinans* on, effect of on respiration of, 3258; var. react. to, 1775, 3258.
—, *Lactobacillus delbrueckii* on, effect of on development of antibacterial substances in, 2177.
—, Leguminosae witches' broom virus on, 724.
— mosaic virus in U.S.A., non-transmission of by seed, 2870.
—, *Rhizobium trifolii* on, effect of on development of antibacterial substances in, 2177.
— root rot, effect of phytotoxins from crop residues on, 2626.
—, *Staphylococcus aureus* on, effect of on development of antibacterial substances in, 2177.
—, *Uromyces appendiculatus* on, effect of on respiration of, 1462.
Ramularia coleosporii in Estonia, geographical distribution of, 556.
— *foeniculi* on *Foeniculum vulgare*, 3033.
— *gossypii* on cotton, 1010.
— *phaseoli* on bean, 2136.
— *phaseolina* on bean, 1149.
— *rosea* and *R. uredinis* in Estonia, geographical distribution of, 556.
Ramulispora sorghi on sorghum, 312.
Ranunculus asiaticus disease, resemblance morphological characters of pathogen *Itersonilia*, 356.
— —, *Ranunculus* mottle virus on, in U.S.A. incidence of, and transmission of, by vector 2044.
Raphanus sativus, see Radish.
*Raspberry (*Rubus*), *Arabis* mosaic virus on Scotland, association of *Xiphinema diversi caudatum* with, 1499.
—, *Botrytis cinerea* on, in Hungary, 167 factors affecting, 1670; timing of spra against, 3311b.
— bushy dwarf virus, spread of, (?)due infected pollen, 3311m.
*—, *Coleroa chaetomium* on, in U.S.S.R. symptoms of, 1663.
—, *Didymella applanata* on, 3630d; in Canad 2478; Hungary, 1670; *U.S.S.R., 166 control, 2478; factors affecting, 167 isolation of phytotoxin from cultures c 2285; symptoms of, 1663.
— diseases in Canada, control, 2478.
—, *Elsinoe veneta* on, in Canada, 247 U.S.S.R., 573a; control, 573a, 2478; effe of on yield, 573a.
—, *Hapalosphaeria deformans* on, effect of ra on spread of, 3311c.
— leaf curl virus on raspberry, 2478.
*—, *Leptosphaeria coniothyrium* on, U.S.S.R., symptoms of, 1663.
— mosaic virus on raspberry in German 2284a,b; control, 2478; differentiation c 2284b; forms of, 2284a; transmission of vectors, 2284b.
— New Logan 64 virus, characterization c 3311n.
—, *Phytophthora fragariae* on, spec. react. t 3390.
—, (?)*Pseudomonas syringae* on, in Canad 3384.
— ring spot virus on currant, 2282.
— — — — on *Lolium perenne*, 2406.
— — — — on raspberry in Scotland, 3311 multiplication of vector of, 2406; transmi sion of, by seed, 1498; by vectors, 2406.
— — — — on *Stellaria media*, 2406.
— — — — str. on cherry and currant, 1668.
—, *Sphaerotheca macularis* on, in Canad 2478.
— viruses A and B, 383; transmission mechanically, 383, 1047.
**Rauwolfia serpentina*, *Curvularia lunata* o control, effect of on yield, 3526.
Rehmannia glutinosa var. *huaichingensis*, D huang degeneration virus on, in China, str. tobacco mosaic virus, 1505.
Reports (see also Conferences), Argenti (Agric.Exp.Stn), 513, 2598; **Australia** (D Pl.Ind.C.S.I.R.O.), 1850; (Waite Agric. Re Inst.), 10; Austria, 7; (Bundesanstalt Pfla zenschutz, Vienna), 840; Cambridge Pla Breeding Institute, 2160; **Canada** (Agricu ture), 1180; (Res.exp.Fm Saanichton), 311 (Forestry), 158; (Forest Prod.Lab.Dept For 2865; Central Africa (Agric.Res. Counci 1387; **Ceylon** (Rubber Research Institute 1090; (Tea Res. Inst.), 1721; Commonw.Fo Inst. Oxford, 3212; Cyprus (Agriculture 2944; **Denmark** (State Phytopath.Exp.Str 510; (State Seed Testing), 1402; **Dubli** (Agriculture), 508; (Horticulture & Forestry 2938; E. Africa (Agric. & Forestry), 294

E. Malling Research Stn, 2354; Edinburgh School of Agriculture, 3629; European and Mediterranean P.P.O., 1336, 3631; Florida, 2945, 3635; **France** (Market Garden Plant Improvement Stn), 509, 2596; (Stn Path.veg. du Sud-Est), 838; **Germany** (Biol.Zentralanstalt), 6; (Federal Biol.Inst.Agric. Forestry), 5; (plant protection group), 3313; (Plant Protection Service), 1845; Ghana (Cocoa Research Institute), 85; Glasshouse Crops Res.Inst., 1175; Hawaiian Sugar Exp. Stn, 2100; Hop Res.Wye Coll., 3522; **India** (Agriculture, New Delhi), 1178; (Coffee Board), 328; (Rice Res.Inst.Cuttack), 994; (S. India Tea Dept), 1718; (Tea, Tocklai), 1722; Int.Amer. Cacao Cent., 1519; International meeting on virus nomenclature, 1494; Jamaica, 3315; Japan (Nat.Inst.Agric. Sci.), 11; John Innes Institute, 2593; Long Ashton, individual abstracts; **Malaya** (Agriculture), 512; (Rubber Res.Inst.), 1089; **Mauri ius** (Agriculture), 2943; (Sug.Ind.Res. Inst.), 3188; Natn.Veg.Res.Stn Warwick, 2594; **Netherlands** (Horticultural Research), 233; (Wageningen, Seed Test.Stn), 3312; **New S. Wales** (Biol.Branch), 9; (Dept Agric.), 2357, 2942; **New Zealand** (Cawthron Institute), 1851; (D.S.I.R.), 3633; **N. Ireland** (Plant Path.Div.), 4; (Res. & Tech.Work Minist.Agric.), 3630; Northern Nigeria (Cotton Growing Corp.), 129, 2731; Philippines (Rice Res.Inst.), 992; Plant protection committee for S.E. Asia & Pacific Region, 1887; Queensland (Sugar Expt.Stns), 1710; Reunion (I.R.A.T.), 1179; Rocky Mtn Forest Exp.Stn, 2847; Rothamsted, 2592; Samaru (Inst.Agric.Res.), 1404; Sarawak (Dept.Agric.), 2358; **Scotland** (W.) Agric. Coll., 2939; Scottish Hort.Res.Inst., 3311; S. African Sugar Exp.Stn, 1708; Switzerland (Federal Agric.Stn Lausanne), 1846; Tanganyika Sisal Growers Ass., 132; Tanzania (Forest tree diseases), 1745; Thailand (Cotton Growing Corp.), 2730; **U.K.** (For. Res.) 440, 2108; (For.Prod.Res.), 173; (Trop. products Inst.), 3660; **U.S.S.R.** (Bot.Soc., Mycol.Sect.), 8; (Plant Protection), 1177; Welsh Plant Breeding Stn, 3310; Wye Coll., see Hop Res.

Retinocyclus abietis on *Abies balsamea* and spruce, 3582.

RH-341 against *Glomerella cingulata* on coffee, 1267b.

Rhabdocline pseudotsugae on pine, 463.

— — on *Pseudotsuga menziesii*, 172.

Rhacodiella vitis on vine, 507, 1513t, 3308.

Rhamnus cathartica, cucumber mosaic virus on, symptoms of, 137.

— —, *Puccinia coronata* on, physiologic races of, 965.

Rhaponticum carthamoides, *Septoria rhaponticola* on, in U.S.S.R., 1060.

Rheum, see Rhubarb.

**Rhinotrichum repens* on pine, 462.

Rhizobium, interaction of with strawberry green petal virus on clover, 1635.

— *japonicum*, *R. leguminosarum*, *R. meliloti*, *R. phaseoli*, and *R. trifolii*, effect of fungal antibiotics on, 1287.

— *trifolii* on clover, 2256.

— — on radish, 2177.

Rhizoctol against damping-off of pine, 3225a,b; as seed treatment for pine, 1353b.

[Rhizoctol] in combination as seed treatment for cotton, 1268.

Rhizoctonia aderholdii on cabbage, 573b.

— *callae* and *R. endophytica*, taxonomy of, 2194.

— *fragariae* on strawberry, 2478.

— —, taxonomy of, 2194.

— *globularis* identified as *Sebacina*, 10e.

— *repens* on *Dactylorchis purpurella*, forming mycorrhiza, 244.

— *rubiginosa* identified as *Ascophanus carneus*, 10e.

*— *zeae* on maize, 3632b.

Rhizophydium graminis, fungus in roots of barley resembling, 2592o.

Rhizopogon colossus on *Pseudotsuga menziesii*, forming mycorrhiza, 2981.

— *roseolus* on *Liquidambar styraciflua*, forming mycorrhiza, 1891.

Rhizopus arrhizus, effect of 10 atmospheres pressure of O on, 248.

— — on apple, 3132.

— — on tobacco, 2824.

— —, sensitivity of to chilling, 3505.

— *oryzae* on sweet potato, 1471.

— —, sensitivity of to chilling, 3505.

— *sexualis*, effect of volatile fungal metabolites on, 49; of volatile metabolites from on gametophytes of *Pteridium aquilinum*, 3347.

— *stolonifer*, effect of low temperatures on mycelial growth rate and sporulation of, 247; of volatile metabolites from on gametophytes of *Pteridium aquilinum*, 3347.

— — in soil, 2627.

— — on beet, 2340.

— — on chicory, 2144.

— — on cotton, 1593, 3449.

— — on grapes, 836.

— — on groundnut, 2903.

— — on maize, 2706.

— — on peach, 2173, 3505.

— — on *Prunus*, 2465.

— — on strawberry, 1302b.

— — on sweet potato, 1324, 1471.

— — on tomato, *434, 1517.

— —, pectic enzymes of, 3342.

— —, production of volatile inhibitors of spore germination by, 1210.

— —, resistance of to hydroxyquinoline, pentachlorophenol, and salicylanilide, 2375; to sevin, 860.

Rhododendron, *Armillaria mellea* on, 660.

—, *Cercospora* on, in Singapore, 1223.

—, *Cylindrocladium floridanum* on, 2468.

—, *Exobasidium vaccinii* on, control, 660.

—, *Ovulinia azaleae* on, in *Queensland, 2036; control, 660, 2036.

—, *Phytophthora cinnamomi* on, in New S. Wales, spec. react. to, 2357k.

— root rot, 660.

Rhopalosiphum maidis transmitting barley yellow dwarf virus, 3395; leaf spot virus disease of cereals, 3041; maize dwarf mosaic virus, 975b; mulberry mosaic virus, 755; *Musa textilis* mosaic virus, 2436.

— *padi* transmitting barley yellow dwarf virus, 1991, 2758, 3395.

Rhubarb (*Rheum*), viruses on, in Great Britain, identification and isolation of, 3302.

—, turnip mosaic virus on, in Canada, 3615; Great Britain, 3302.

—, turnip mosaic virus str. on, in Canada, 2161 l.

—, virus-free by meristem tip culture, 2594b.

Rhus typhina, fungi on, in Poland, 2083.
Rhynchosporium secalis on barley, see Barley.
— — on oats, 917.
— — on rye, 1989.
Ribes grossularia, see Gooseberry.
Rice (*Oryza sativa*) akagare, root exudates in relation to, 3099.
—, *Alternaria tenuis*, *Aspergillus niger*, and *A. ustus* on, 3416b.
—, bacteria on, inhibition of *Pyricularia oryzae* in culture by, 992b.
— Bangkhen virus in Thailand, symptoms of, 1566.
—, *Cochliobolus miyabeanus* on, in France, 995; India, 920a, 994; Japan, 1571; Northern Territory Australia, 1572; accumulation of fluorescent compounds in, 3420; association of rice stripe virus and *Sclerospora macrospora* with, 1571; biology of, 315; comparative study of 4 isolates of, 3095; control, 315, 1571, 3092; effect of hoja blanca virus infection on susceptibility to, 2012; hydrostatic pressure on germinability of, 3419; effect of, on, 3092; on quality and yield of kernels, 317; factors affecting, 1571, 1572; resistance to, 994; sporulation induced by in non-sporulating isolates of, 3095; staining in relation to starch accumulation of, 2713; symptoms of, 315.
—, *Corticium sasakii* on, control, 29a,b, 235k, 531.
—, — *solani* on, 259; hosts, isolates, and symptoms of, 1573.
—, *Curvularia geniculata* on, in France, 995.
—, — *lunata* on, in France, 995; control and effect of, on, 3092.
— diseases in France, 995; India, 3428; biology of, and control, 315; H_2S in soil in relation to, 609; review of, 3097; rhizosphere microflora in relation to, 3428, symptoms of, 315.
— dwarf virus on *Echinochloa crus-galli*, 911.
— — — on rice in Japan, 992f; biology of, and control, 315; electron microscope study of, 235d, 911; identification of, 74; similarity of to rice grassy stunt virus in the Philippines, 992f; symptoms of, 315.
— 'dwarfing' virus on rice in Vietnam, transmission of by vectors, 2200.
—, *Entyloma oryzae* on, in France, 995; U.A.R., 1242.
—, *Ephelis oryzae* on, in India, 3097.
—, fungi on, in India, 1575; factors affecting stored, 318.
—, *Fusarium lateritium* on, effect of, on, 3416b.
—, — *oxysporum* on, 259; effect of, on, 3416b.
—, — *solani* on, effect of, on, 3416b.
—, *Gibberella fujikuroi* on, control, 3092; effect of, on, 3092; on nitrate reductase of, 1576.
— grassy stunt virus on rice in the Philippines, 992f,g; electron microscopy of, 992f; similarity of particles of to rice dwarf virus in Japan, 992f.
—, *Helminthosporium* and *H. hawaiiense* on, effect of on, 3416b.
—, — *triseptatum* on, in France, 995.
—, hoja blanca virus on rice, effect of on susceptibility of to *Cochliobolus miyabeanus* and *Pyricularia oryzae*, 2012; transovarial acquisition of by vectors, 3417.
—, inhibition of root growth of, by toxic metabolite produced by *Cochliobolus heterostrophus*, 3083.
[Rice], *Khuskia oryzae* on, control and effect of, 3092.
—, *Leptosphaeria salvinii* on, in France, 995; India, 920a, 994, 1574; the Philippines, 992c; biology of and control, 315; damage caused by, 992c; factors affecting, 1574; resistance to, 994; symptoms of, 315, 1574; var. react. to, 1574.
—, — — var. *irregulare* on, in the Philippines, damage caused by, 992c.
—, maize dwarf mosaic virus on, localized infection caused by, 2711.
—, mycoflora of stored, review of, 3097.
—, **Myrothecium indicum* on, in India, 1575.
*—, — *verrucaria* on, in India, 2016.
—, *Penicillium* on, control and effect of, 3092.
—, — *funiculosum* on, effect of, 3416b.
— 'penyakit merah' in Malaysia, virus causing, 119.
—, *Phyllosticta glumarum* on, in India, 82.
— protection and quarantine, recommendations of Working Party on Production and Protection, 3097.
—, *Pyricularia oryzae* on, in France, 995; India, 994, 1568; Philippines, 992a, 3093; S.E. Asia, 235i; U.A.R., 2428; accumulation of fluorescent compounds in, 3420; biology of, 315; changes in carbohydrates and phenols in, 996; control, 11c, 29a,b, 120, 121, 235k, 315, 531, 994, 1568, 2428, 3330, 3423a,b, 3424, 3425; correlation of N metabolism with, 125; effect of ferulic acid on resistance to, 608; of hoja blanca virus infection on susceptibility to, 2012; of hydrostatic pressure on germinability of spores of, 3419; of mixed inoculum on, 3421; of temp. on development of, 1570; of, on N metabolism in, 126; on pathogenicity, 2716; on yield, 1568; electron microscopy of, 2714, 3422; factors affecting, 11c, 997, 2223; forecasting outbreaks of, 1568; fungal proteins in, 2717; genetics of, 124, 235i, 992a, 1569, 2013, 2014; identification of races of, 11b; induced mutants of, 2716; interaction between 2 races of, 3420; international set of vars. for differentiating races of, 2224; method for evaluating inhibitory action of fungicides on sporulation of, 2715; physiologic races of, 123, 994, 3093; production of mutations in by chemicals, 122a; relationship of mutants of to sugar metabolism, 122b; resistance of to races of, 123, 1567; selectivity of toxin produced by, 3094; spread of, 2225; study on, 607; var. react. to, 124, 235i, 1568, 2013, 2014.
—, *Pythium aphanidermatum* on straw of, survival of in soil, 259.
— rosette disease in the Philippines, rice rosette virus proposed as name for, transmission of by vectors, 2712.
—, *Sclerospora macrospora* on, in Japan, 1571; New S. Wales, 2357d; association of with *Cochliobolus miyabeanus*, 1571.
— stripe virus on rice in Japan, 1571; accumulation of fluorescent compounds in, 3420; association of with *Cochliobolus miyabeanus*, 1571; biology of and control, 315; purification of, 11h; symptoms of, 315; technique for detecting viruliferous vectors, 11h.
—, **Trichoconis indica* on, in India, 1575.
—, — *padwickii* on, aerobiological observations on, 3096; control, 3092; effect of, 998, 3092.

[Rice] tungro virus on rice in the Philippines, 992e,g, 3091; S.E. Asia, 235i; control of vectors, 3091; effect of plant age on incidence and intensity of, 3418; effect of on yield, 992g; genetics of, 235i; method for testing resistance to, 992e; non-persistence of in vectors, 993; var. react. to, 235i.
—, *Ustilaginoidea virens* on, in India, 994; effect of hydrostatic pressure on germinability of, 3419; in air over fields of, 316; resistance to, 994.
— virus disease in India, resemblance of to rice tungro and transmission of by vectors, 2222.
— — diseases in the South Pacific, summary of data on, 1566; incidence and symptoms of, 2e.
—, *Xanthomonas oryzae* on, in India, 920a, 994, 3427; Philippines, 992d; S.E. Asia, 235i; accumulation of fluorescent compounds in, 3420; anatomical studies of, 2720; antibacterial effect of photosensitizing dyes on, 3098; assay of bacteriophage of, 2719; control, 29a,b, 994; detection of, 992d; effect of chlorinated water on control of, 1577; entrance of through hydathodes, 2369; forecasting outbreaks of, 11f, 235b; genetics of, 235i, 3426; new virulent str. of, 3427; physiologic races of, 994; resistance to, 994; screening bactericides against, 11f; utilization of inorganic S by, 2603; var. react. to, 235i, 992d, 3426.
—, — *oryzicola* on, in India, resistance to, 994.
— yellow dwarf virus on rice in the Philippines, 992g, 3091; control of vectors of, 3091; effect of on yield, 992g.
**Ricinus*, *Phyllosticta ricini* on, in Czechoslovakia, 3355.
— *communis*, *Cercospora coffeicola* on, 2023c.
— —, **Corynespora cassiicola* and *Leveillula taurica* on, in India, 1308.
— —, *Macrophomina phaseoli* on, development of pycnidia and pycnidiospores of, 66.
*— —, *Periconia byssoides* on, in India, 1308.
— —, *Rhizoctonia* on, pathogenicity of isolates of, 579.
Robinia mosaic virus, hosts of, not related to other viruses, transmission of by vectors, 1346.
—, tomato black ring virus str. on, transmission of to *Sambucus nigra*, 77.
— *pseudoacacia*, cucumber mosaic virus on, in Germany, 1823.
— — mosaic virus, hosts of and transmission of, 2844.
Rodosan as seed treatment for plants, 2606.
Rogor in combination as seed treatment for maize, 2426.
Rosaceae, *Phytophthora fragariae* on, spec. react. to, 3390.
*Rose (*Rosa*), *Agrobacterium tumefaciens* on, in Poland, 1511.
*—, *Alternaria tamijiana* on, in India, 138.
*—, *Arabis* mosaic virus on, in Scotland, association of *Xiphinema diversicaudatum* with, 1499.
—, *Botrytis cinerea* on, in Austria, symptoms of, 1241.
—, cherry necrotic ring spot virus on, relation of to rose mosaic complex, 1019.
—, *Diplocarpon rosae* on, in Rumania, 2750; U.S.A., 1020a; breeding against, problems associated with, 2751; control, 2173, 2750; decline in virulence of stored conidia, 1020b; effects of environment and selected chemicals on, 2752; host/parasite interaction in, 3468; popular account of control and symptoms of, 2045; seasonal variation in susceptibility to, 1020b; spec. react. to, 1020a; var. react. to, 2750; virulence of inocula in different areas, 1020a.
[Rose] diseases, in Bulgaria, biology of, 1059; control, 1059, 2249; morphological characters and symptoms of, 2249.
—, *Elsinoe rosarum* on, 1021.
—, *Leptosphaeria coniothyrium* on, in U.S.S.R., 643.
— mosaic virus, serology of, 3634c.
*—, *Peronospora sparsa* on, in Mauritius, 2943b.
—, *Phragmidium mucronatum* on, control and symptoms of, 2045.
—, *Sphaerotheca macularis* on, control, 2173.
—, — *pannosa* on, in India, 82; control, 2045, 2938b; fine structure of conidia of, 358; resistance to, 357.
— streak virus on rose in Germany, not related to cherry necrotic ring spot virus, not transmitted mechanically, spec. react. to, 1623.
—, virus diseases, control and morphological characters of, 2249; symptoms of, 661, 2045, 2249.
— yellow mosaic, cherry necrotic ring spot virus causing, 1019.
Rosellinia aquila on Coniferae, 2117.
— *bunodes* on coffee, 1582.
— *necatrix* on apple, 3127, 3495.
— — on currants, 2939f.
— — on fruit trees, 11d.
— — on hops, 3033.
— — on mulberry and pear, 3127.
— *pepo* on coffee, 1582.
*Rubber (*Hevea brasiliensis*), *Ascochyta hevea* on, in Sarawak, 2358d.
—, bacteria on, in Malaya, 1089d.
—, *Botryodiplodia theobromae* on, in Malaya, 1089a.
—, *Corticium salmonicolor* on, in Malaya, 1089c; Peru, 1088; control, 1088, 1089c; spread and symptoms of, 1088.
—, — *solani* on, in the Ivory Coast, 2306; Peru, 1088; control, 1088, 2306; cultural properties of, 2306; morphology of, 2306; spread and symptoms of, 1088.
— dieback, factors affecting, 3185.
— diseases in Africa, 3183a; Malaya, 3183g; S.E. Asia, 3183a; S. Vietnam, 3183e; control, 3183a,e; economics of control in, 3183c; review of, 3183g.
—, *Dothidella ulei* on, in Malaya, 1089f; Peru, 1088; control, 1088; periodicity of spore discharge of, 1089f; spread and symptoms of, 1088.
—, *Fomes lignosus* on, in Ceylon, 1090c; the Ivory Coast, 3183d; Malaya, 1089a; Peru, 1088; control, 1088, 1089a, 1090c, 1705; effect of age of trees and inoculum size on, 1706; spread and symptoms of, 1088.
—, — *noxius* on, 1705; in Malaya, 1089b; (?)Peru, 1088; control, spread and symptoms of, 1088.
—, *Ganoderma pseudoferreum* on, 1705; in Malaya, 1089a; effect of age of trees and inoculum size on, 1706; elimination of, 1089a.
—, *Gloeosporium alborubrum* on, in Ceylon, 1090b; causing dieback, 3185; effect of Hg on, 1090b; factors affecting sporulation of, 1090b.

[Rubber], *Glomerella cingulata* on, in Peru, spread and symptoms of, 1088.
—, *Oidium heveae* on, host induced change in morphology of, 1093.
—, *Pellicularia koleroga* on, in Peru, spread and symptoms of, 1088.
—, *Penicillium* on, in Malaya, 1089a.
—, *Phyllachora huberi* on, in Peru, spread and symptoms of, 1088.
—, *Phytophthora* on, in Ceylon, 1092; causing dieback, 3185; nomenclature of, 1091; sexual compatibility types of, 1092.
—, — *meadii* on, in Ceylon, 1090a, 1091; Malaysia, 2815; distinction of, from *P. palmivora*, 1091; factors affecting spread of, 1090a; perennation of, 1090a; physiologic races of, 1090a.
—, — *palmivora* on, in Cambodia, 1485, 3183f; Ceylon, 1091; the Ivory Coast, 1485; Malaya, 2815, 3184; Peru, 1088; Thailand, 3184; Vietnam, 1485; control, 1088, 3183f; distinction of, from *P. meadii*, 1091; factors affecting, 1707; sexual reproduction of, 1485; spread and symptoms of, 1088; var. react. to, 1707.
—, *Pythium* on, in Cambodia, 3183f.
— root diseases in the Ivory Coast, 3183b; Malaysia, 1949; S.E. Asia, 3183b; biological control of, 3186.
—, *Trichoderma viride* on, in Malaya, 1089a.
Rubus idaeus, see Raspberry.
— *occidentalis*, see Raspberry.
Runner bean, see Bean, Runner (*Phaseolus coccineus*).
Russula amygdaloides, inhibition of root elongation in oak by exudates from, 2112.
Rusts, see Uredinales.
Rutabaga, see Swede.
Rye (*Secale cereale*), *Calonectria nivalis* on, in Czechoslovakia, determination of infection area of, and factors affecting, 3079; degree of infection in seed from different sources, *Fusarium* sp. associated with, 3080.
—, *Cercosporella herpotrichoides* on, in *U.S.S.R., 580; control, 926, 1542; effect of on, 926; on yield, 1542; first stages of infection by, 1955; virulence of, 287.
—, *Claviceps purpurea* on, in U.S.S.R., 1513g; alkaloid content and type of auxotrophic UV mutants of, 2615; factors affecting, 1513g; grasses as source of infection, 1515.
—, *Cochliobolus sativus* can infect, 595.
— diseases, trials of resistant vars. in Argentina, 1954.
—, *Erysiphe graminis* on, in U.S.S.R., 1513e.
—, fungi on, in Finland, 3314.
—, *Fusarium* on, control, 973; method for determining 2,3-benzoxazolinone in, 2990; var. react. to, 973.
—, *Griphosphaeria nivalis* on, var. react. to, 973.
—, *Hordeum* mosaic virus on, 289.
—, *Ophiobolus graminis* on, 3043.
—, *Puccinia graminis* on, in Canada, 2677; Germany, 1960; *Agropyron repens* as source of infection, 1515; physiologic races of, 1960.
—, — *recondita* on, in U.S.S.R., 1513d; effect of, on amino-acid composition of leaves of, 972; P fractions in leaves of, 310.
—, *Rhynchosporium secalis* on, review of, 1989.
—, *Sclerotinia borealis* on, in Finland, resistance to, 3469.
—, *Tilletia secalis* on, in U.S.S.R., 1513c.
—, *Typhula incarnata* on, in Germany, 92.
[Rye], *Urocystis occulta* and *U. vavilovii* on, in U.S.S.R., 1513c.

Sabithane against *Puccinia graminis*, *P. recondita*, and *P. striiformis* on wheat, 3046.
Saccharicoccus sacchari, *Aspergillus parasiticus* on, in India, 524.
Saccharomyces cerevisiae, control, 2970.
— —, effect of volatile metabolites from, on gametophytes of *Pteridium aquilinum*, 3347.
— *pastorianus*, effect of phytoactin on, 2610.
Saccharum officinarum, see Sugarcane.
— *spontaneum*, association of soil fungi with, 2184b.
Sadoplon, see Thiram.
Safflower (*Carthamus tinctorius*), lettuce mosaic virus on, genetics of, 3527; reaction of, to, 1307.
—, *Malvastrum coromandelium* yellow vein mosaic virus on, 76.
—, *Puccinia carthami* on, control, 3539a; relationship between foliage and seedling resistance to, 3528.
—, *Verticillium alboatrum* on, 332.
*—, — *dahliae* on, in New S. Wales, 9.
— virus disease in New S. Wales, non-transmission of mechanically, similarity of symptoms of to ' big-bud ' virus, 9.
Salicylanilide, effect of on fungi on paper, 2375.
—, resistance of *Rhizopus stolonifer* to, 2375.
Salix, *Cercospora* on, in Singapore, 1223.
—, *Marssonina salicicola* on, in England, 440, 2108.
—, *Trametes suaveolens* on, in U.S.S.R., 2527.
—, *Venturia chlorospora* on, in England, 440.
Salsola kali, beet mild yellowing virus on, 181.
Sambucus, **Phytophthora citricola* on, in Canada, 1603.
—, *Pseudomonas syringae* on, in Poland, symptoms of, 1176g.
*— *ebulus*, *Phyllosticta ebuli* on, in Czechslovakia, 3355.
— *nigra* 'Aurea ' virus in N. America, hosts, properties, and serological relationships of, 3634d.
— —, cherry leaf roll virus on, 77.
— — crinkle and leaf roll viruses, 2321.
— —, tomato black ring virus on, 77.
— — virus diseases, 2321.
— — yellow-net band and ring spot mosaic virus, 2321.
— *racemosa*, cherry leaf roll virus on, identification of, 77.
Sandalwood (*Santalum album*) spike virus on sandalwood, technique for detecting, 1113.
Sandovit, use of, on *Capsicum* and tomato, 3207.
Sansevieria diseases, review of literature on, 641.
— *laurentii*, fungus on in the Ivory Coast, resemblance of to *Meliola subdentata*, 641.
Santalum album, see Sandalwood.
Santar 'A' against cacao greenpoint gall, 3039.
— — as wound dressing for branch cankers and pruning cuts on tea bushes, 1718a.
— M against *Nectria galligena* on apple, 2369a.
Saprolegnia ferax, chemical composition of hyphal wall of, 2994.
**Saraca indica*, *Glomerella cingulata* on, 1347.
Sawdust, formation of cellulolytic enzymes by wood destroying fungi on, 2334.
—, *Polystictus versicolor* and *Trametes gibbosa* on, formation of red pigment during growth of, 1766.
—, see also Timber.

Scaphoideus littoralis in relation to vine golden flavescence virus, 225.
Schizaphis graminum transmitting barley yellow dwarf virus, 3395.
Schizophyllum commune, control of β-glucosidases in, 3665.
— —, identification of indole-3-acetic acid in, 3345.
— — on timber, 2332.
— —, polyols in, 2389.
— —, study on cell walls of, 882.
Schizosaccharomyces octosporus, effect of volatile metabolites from on gametophytes of *Pteridium aquilinum*, 3347.
Sciapteron tabaniformis on poplar, 2535.
Scindapsus, *Pseudomonas cichorii* on, control, 3116.
Scirrhia acicola on pine, see Pine.
— *pini* on pine, see Pine.
— — on *Pseudotsuga menziesii*, 2860.
— — + *Pestalotia veronicae* on pine, 3227.
Scleroderris lagerbergii on pine, see Pine.
— — on spruce, *1361, 3237.
Sclerophoma pityophila on pine, 1126.
Scleroracus balli and *S. dasidus*, transmitting clover phyllody and potato witches' broom viruses, 2660.
Sclerospora macrospora on maize, *7, 1998, 3631.
— — on rice, 2357d.
— — on sugarcane, 2307.
— *philippinensis* on maize, 2l.
— *rayssiae* on barley, 2694.
*— — on maize, 3632b.
— — var. *zeae* on maize, 2707.
— *sacchari* on sugarcane, 235g.
— *sorghi* on grass-sorghum hybrids, 2947a.
— — on sorghum, 990, 2008, 2947a.
Sclerotinia borealis on cereals, 1513a, 3469.
— — on *Phleum pratense*, 3469.
— — on rye, 3469.
— *convoluta* on *Iris*, 655, 1614.
— *draytonii*, effect of antibiotics and growth inhibitors on, 256.
— —, utilization of carbohydrates by, 256.
— *fructicola*, effect of drying on viability of germinated spores of, 3339.
— —, mechanism of S reduction by conidia of, 529.
*— — on cherry, 2475.
— — on peach, see Peach.
— — on stone fruit, 376.
— —, self-inhibition and self-stimulation of conidia of, during germination, 3662.
— *fructigena*, effect of I.A.A. on sporulation of, 884.
— — on apple, see Apple.
— — on cherry, 2279, 2457c, 2474.
— — on pear, 2457c.
— *fuckeliana*, effect of phelam DP on, 2172.
— — on vine, 2155.
— *gladioli* on *Gladiolus*, 1613.
— *homoeocarpa* on *Agrostis*, 12y.
— — on *A. palustris* and *A. tenuis*, 1284.
— — on *Lolium*, 2254.
— — on *Poa pratensis*, 1630.
— — on turf, 1631.
— *laxa*, characterization of extracellular pectolytic enzymes of, 2995.
— — on almond, 3506.
— — on apricot, 2277.
— — on cherry, 2279, 2457c, 2474.
— — on greengage, 2457c.
*[*Sclerotinia laxa*] on stone fruit, 1945a.
— *mali* on apple, 2773.
— *minor*, effect of Na trichlorophenate on sclerotia of, 25.
— — in soil, 58b.
— — on chicory, 3611.
— — on lettuce, 58c.
— — on *Parthenium argentatum*, 3554.
— *sclerotiorum*, antagonism of soil bacteria and fungi to, 3004.
— —, effect of sodium trichlorophenate on sclerotia of, 25.
*— — on almond, 691.
— — on carrot, 80f, 466.
— — on cucumber, 842a, 1877.
— — on *Parthenium argentatum*, 3554.
— — on pea, 1894.
— — on soybean, 1513i.
— — on strawberry, 1301.
— — on sunflower, 42, 2086.
— — on tomato, 42.
— *squamosa* on onion, 838.
— *trifoliorum*, effect of various C sources on growth of, 3663.
— — on clover, see Clover.
— *vaccinii* on *Vaccinium*, 1046.
Sclerotium cepivorum, effect of certain vitamins on, 2910.
— — on *Allium*, 491, 3609.
— — on garlic, 3293.
— — on onion, 838, 2159i.
— *rolfsii*, antagonism of *Trichoderma viride* to, 3637.
— — , asexual nuclear behaviour of, 1924.
— — , basidial formation by, 2670.
— —, chemical composition of hyphal and sclerotial walls of, 1893.
— —, demonstration of fundamental hyphal type in, 2642a.
— —, development of sclerotia in, 3698.
— —, effect of ammonia on, 2622; of Na trichlorophenate on sclerotia of, 25.
— —, *Fusarium oxysporum* ff.sp. *cubense* and *vasinfectum* not serologically related to, 3358.
— — in India, hosts of, 2669.
— — in soil, 2189, 3655.
— —, methods for obtaining basidial stage of, 885a,b,c.
— —, morphogenetic effect of acids on, 1457.
— — on apple, 676.
— — on bean, 1941, 2885, 3274.
— — on *Colocasia*, see *Colocasia*.
— — on cotton, 2730d.
— — on groundnut, see Groundnut.
— — on *Hibiscus cannabinus*, 639.
*— — on lentil, 2570.
— — on lucerne, 2946b.
— — on potato, 67, 885b, 2670.
— — on sweet potato, 2098.
— — on soybean, 2946b.
— — on tomato, 156, 2211, 2314.
— — on *Trachyspermum ammi*, 2794.
— — on wheat, 2996, 3063.
— —, orientation and function of protoplasm transfer in, 2642b.
— —, study on, 1518.
— —, survival of in liquid N, 3367.
— *tuliparum* on tulip bulbs, 1624.
— *wakkeri* on lily, 1277.
Scolecotrichum melophthorum on cucumber, 573e.
Scolytus multistriatus transmitting *Ceratocystis ulmi*, 2837.

Scopellopsis dalbergiae on *Dalbergia paniculata*, 2320.
**Scopulariopsis fimicola* on mushroom, 2357g.
Scorzonera hispanica, *Albugo tragopogonis* on, factors affecting spore release, 1900.
Scyphophorus interstitialis (?)transmitting *Aspergillus niger*, 3458.
SD 345 as soil disinfectant, 1175c.
Secale cereale, see Rye.
Securinega suffruticosa, *Ascochyta securinegae* on, in U.S.S.R., 1060.
'Seed dressing R' as seed treatment for tomato, 1334.
— health, antagonism of bacteria in tests for, 2169; certification by working party (EPPO-ISTA), 1203; handbook on testing, 1b; technique for testing, 1d, 1486.
— pelleting against damping-off of pine, 1353b.
— treatment by liquids, study on distribution of preparations over cereal seeds, 24.
**Selenophoma donacis* on wheat, 3384.
Selinon against *Botrytis cinerea* on grapes, 837; *Sphaerotheca mors-uvae* on currant, 2073.
Semesan against *Sclerotinia convoluta* on *Iris*, 1614.
Semex as seed treatment for rice, 2710.
—, constituents of, 2710.
Senecio cruentus, see Cineraria.
Seprisan, inhibition of *Curvularia eragrostidis*, *Ganoderma zonatum*, and *Marasmius palmivorus* by, 3536.
Septoria aecidiicola in Estonia, geographical distribution of, 556.
— *anthurii* on *Anthurium andreanum* and *A. scherzerianum*, 510a.
— *apiicola* on celery, 495, 2913.
— *chrysanthemella* on *Chrysanthemum*, 917.
*— *grossulariae* on gooseberry, 1663.
— *lupini* on lupin, 1030.
— *nodorum*, see *Leptosphaeria nodorum*.
— *passerinii* on barley, 106.
— *populi* on poplar, 1337, 1343.
— *rhaponticola* on *Rhaponticum carthamoides*, 1060.
— *ribis* on currants, 3142.
— *socia* in Estonia, geographical distribution of, 556.
— *tritici* on wheat, see Wheat.
— *unedonis* on *Arbutus unedo*, 645.
DL-Serine, effect of, on multiplication of tobacco mosaic virus on tobacco, 1727.
Serpula lacrimans, effect of acidity of artificial nutrients on development of, 1767.
— —, intracellular polyphenoloxidases of, 1446.
— — on timber, 2527, 2547, 3244.
Serrodes moths associated with *Penicillium digitatum* on citrus, 3441.
*Sesame (*Sesamum indicum*) *Cercospora sesami* on, in Sarawak, 2358d.
—, *Cylindrosporium sesami* on, in Venezuela, *Alternaria sesami* and *Cercospora sesami* associated with, 1854g.
— leaf spots, *Xanthomonas sesami* associated with, 1679.
—, *Macrophomina phaseoli* on, development of pycnidia and pycnidiospores of, 66.
—, *Phytophthora nicotianae* var. *parasitica* on, perennation of and variation in pathogenicity of, 2793a,b.
*—, *Sphaeronema sesami* on, symptoms of, 705.
Sesamum indicum, see Sesame.
Sesbania acabala, bean mosaic virus can infect, 799.
— *exaltata*, bean virus disease on, symptoms of, 13r.
**Setaria italica*, *Pyricularia setariae* on, 2010.
— —, *Xanthomonas indica* on, in India, 3632e.
Sevin, against *Alternaria tenuis* on cotton, *Corticium solani* on mango, 860; vectors of rice tungro and yellow dwarf viruses, 3091.
Sfinx S against *Puccinia graminis*, *P. recondita*, and *P. striiformis* on wheat, 3046.
Shell D-D, effect of on mycorrhiza of beech, pine, and spruce, 1889.
Shirlan against *Colletotrichum musae* on banana, 3147.
— injury to banana, 3147.
Silver nitrate for staining sporangiospores of *Choanephora* and *Gilbertella persicaria*, 3368.
Simazine, effect of, on development of fungi in soil, 2627; on *Sphaerotheca mors-uvae* on currants, 2779.
Sinningia speciosa, see Gloxinia.
Sinocalamus latiflorus, *Erwinia sinocalami* on, symptoms of, 340.
Sisal (*Agave sisalana*), *Aspergillus niger* on, (?)transmission of by vectors, 3458.
—, *Phytophthora nicotianae* on, resistance to, 132.
—, — *palmivora* on, causing zebra disease, 132.
Sisymbrium, potato virus X on, in U.S.S.R., 404.
— *loeselii*, tobacco mosaic virus str. on, in Czechoslovakia, 1605.
Sitanion, *Puccinia striiformis* on, in U.S.A., oversummering of, 2417.
β-sitosterol, effect of on growth of *Phytophthora cactorum* and *P. palmivora*, 2384.
Slugs transmitting *Alternaria brassicicola*, 783.
SMDC as soil treatment, 165.
Sodium, effect of P on content of in cotton, 625.
— arsenate as timber preservative, 2865b.
— — in combination to stabilize Bordeaux mixture, 1433.
— arsenite against *Phoma flaccida* on vine, 2936.
— carbonate against *Phyllactinia suffulta* on mulberry, 1112.
— dehydroacetate, resistance of *Penicillium expansum* to, 1483.
— desoxycholate, effect of, on growth of *Botrytis*, 256; on plant pathogenic fungi, 542.
— dioctysulphosuccinate against Fe chlorosis in avocado pear, 392.
— dodecyl sulphate, effect of, on growth of *Botrytis*, 256.
— ethylmercuric thiosalicylate as bulb treatment for *Narcissus*, 3466.
— fluoride as timber preservative, 2865b.
— methyldithiocarbamate as soil disinfectant, 2902.
— nitrate, effect of, on *Corticium solani* on tomato, 436a.
— nitrite against *Fomes annosus* on pine stumps, 440.
— —, effect of, on tobacco mosaic virus, 911.
— — versus creosote, 440.
— *o*-phenylphenate against *Penicillium expansum* on apple, 1036.
— —, effect of, on development of fungi, 1195.
— —, resistance of *Penicillium expansum* to, 1483.
— — —, see also SOPP.

[Sodium] pentachlorophenate, reduction of conc. of by *Coniophora puteana* and *Trichoderma viride* on treated timber, 2865a.
— propionate, effect of on sporulation of *Fusarium culmorum*, 1451.
— 2-pyridinethiol 1-oxide against *Valsa cincta* on peach, 2467.
— salt, effect of on *Puccinia graminis* on wheat, 3049.
— trichlorophenate, effect of on fungal sclerotia, 25.
Soft fruit diseases, booklet on, 3480.
Sogata orizicola transmitting rice hoja blanca virus, 3417.
Soil, *Achromobacter* in, detoxication of, by, 887.
—, actinomycetes in, in U.S.A., 886; U.S.S.R., 821; effect of buried chitin on, 263; of chloropicrin on, 888; of green manure on, with reference to *Ophiobolus graminis*, 1256b; of MBC-33 on, 888; factors affecting, 550b; in relation to damping-off fungi, 550a; inhibition of *Erysiphe cichoracearum* on cucumber by, 821; isolation of, 3683; re-establishment of in fumigated, 888.
—, *Agrobacterium tumefaciens* in, action of S in soil on, 2366.
—, *Alternaria* in, in U.S.S.R., 61a; development of, in relation to liming, 552; effect of atrazine and simazine on development of, 2627; non-occurrence of, in newly cleared, 1288.
—, ascomycetes in, in U.S.S.R., 1904.
—, *Aspergillus* in, 361; in Australia, 1217; U.S.A., 3681; control, 1217; factors affecting, 53, 550b, 1217.
—, — *chevalieri* in, toxic properties of, 1908.
—, — *flavus* in, stimulating properties of, 1908.
—, — *niger* in, in India, distribution of, in relation to grasses, 2184b; effect of atrazine and simazine on development of, 2627; toxic properties of, 1908.
—, — *oryzae* in, stimulating properties of, 1908.
—, — *terreus* in, in India, distribution of, in relation to grasses, 2184b; effect of pH on growth and sporulation of, 54.
—, — *ustus* in, factors affecting timber breakdown by, 1362; toxic properties of, 1908.
—, — *wentii* in, toxic properties of, 1908.
—, *Bacillus* in, detoxication of by, 887; production of antibiotic principle by, 3683.
—, — *subtilis* in, antagonism of to *Itersonilia pastinacae*, 3296.
— bacteria in U.S.A., 886; antagonism of to phytopathogenic fungi, 3004; effect of buried chitin on, 263; of chloropicrin and MBC-33 on, 888; isolation of, 3683; re-establishment of in fumigated, 888; reinfestation of in sterilized, 3352.
—, bacterium in, antagonism of to *Corticium solani*, 3682.
—, basidiomycetes in, in U.S.S.R., 1904.
—, *Cenococcum graniforme* in, 37.
—, *Cephalosporium* in, effect of on clover, 1287.
—, *Cercosporella herpotrichoides* in, factors affecting, 927; germination of spores of, 553; survival of, 927.
—, *Chaetomium* in, 361.
—, — *globosum* in, in India, distribution of in relation to grasses, 2184b; factors affecting timber breakdown by, 1362.
[Soil], chemical treatment and inoculum potential of, 516d.
—, cherry rasp leaf virus in, in U.S.A., survival of, 2159g.
—, *Cladosporium* in, development of in relation to liming, 552.
—, *Cochliobolus miyabeanus* in, effect of antagonistic actinomycetes and bacteria on, 3683.
—, — *sativus* in, in Canada, 2186; differences in fungistasis in soil with reference to, 2186; effect of substances and soil treatments on germination of spores of, 3001; importance of antiphytopathogenic potential in, 258.
—, *Corticium solani* in, 259; auxin production by, 12g; bean root rot associated with, 190; comparative survival of monobasidial cultures of, 3002b; control, 193b, 550a; effect of antagonists on growth and survival of, 3002a; of quintozene on, 57; estimation of infestation by, 193a; importance of antiphytopathogenic potential in, 258; inhibition of growth of cotton by, 624; modes of penetration of isolates of, 12h; part of spermosphere microflora, 550; saprophytic ability of different strains of, 55.
—, *Cryptomela acutispora* in, 1990.
—, *Curvularia lunata* in, effect of pH on growth and sporulation of, 54.
—, *Cylindrocladium scoparium* in, in Canada, in forest nurseries, 2316; technique for bioassaying and for evaluating efficacy of soil fumigation against, 273.
— disinfection against *Agrobacterium tumefaciens*, 2366; *Alternaria senecionis* on cineraria, 2244; *Aphanomyces cochlioides* on beet, 1784a; *Aspergillus* on groundnut, 2902; *Colletotrichum coccodes* on *Capsicum* and tomato, 3207; *Corticium solani*, 193b, 550a; on groundnut, 1158; on *Phaseolus aureus*, 193b; on pine, 773; on potato, 1176h, 1180a, 1695; cotton wilt, 3456; cucumber root rots, 842a; damping-off of cabbage, 782; of larch, 2327b; of pine, 1352, 2327b, 3225b; of *Thuja plicata*, 2327b; diseases of cactus, 2037; fungi on melon, 501b; *Fusarium*, 550a, 2737; *F. oxysporum* f.sp. *vasinfectum* on cotton, 3448, *F. solani* f.sp. *cucurbitae* on *Cucurbita ficifolia*, 2146; *Gladiolus* corm rot, 651; nematodes, 165; *Ophiobolus graminis* f.sp. *avenae* on *Agrostis tenuis*, 1632; peach rosette mosaic virus, 3136; *Penicillium* on groundnut, 2902; *Phoma destructiva* on tomato, 156; *Phytophthora cinnamomi* on avocado pear, 3148; *Poria hypolateritia* on tea, 1721; *Pseudomonas solanacearum* on tomato, 156; *Pseudoperonospora humuli* on hops, 3522a; *Puccinia striiformis* on *Poa pratensis*, 28; *Pyricularia oryzae*, 3425; *Pythium*, 550a; *Sclerotinia minor* on lettuce, 58c; *Sclerotium rolfsii* on apple, 676; on groundnut, 1158; on tomato, 156, 2211; tomato spotted wilt virus on tobacco, 2511; *Urocystis agropyri* on *Poa pratensis*, 28; *Ustilago nuda* on barley, 3070; *U. striiformis* on *Agrostis palustris*, *Dactylis glomerata*, and *Poa pratensis*, 28, 2251; *Verticillium*, 2737; *V. alboatrum* on strawberry, 3515; *V. cinerescens* on carnation, 1175c; *V. dahliae* on eggplant, 1825.
— — by allyl alcohol, 842a; benzene hexachloride in combination, 501b; Bercemaferbam 50, 773; Bordeaux mixture, 861;

brassicol, 651; calo-clor, 1632; calomel, 550a; captan, 550a, 782; carbadin, 3070; carbathion, 676, 842a, 2327b; chloropicrin, 888, 1158; copper sulphate, 676; cupravit, 3070; D735, 28; DBCP, 165, 1158; DCB, 156; DCMO & DCMOD, 2251; DD, 165; dexon, 1784, 3148, 3522a; 1-3 dichloropropene, 1-2 dichloropropane mixture, 3352; dicloran, 58c; disyston, 2511; DNOC, 676; EP-201, 156, 1825; EP297, 156; ethoxytrichloromethyl thiadiazol in combination, 193b; F461, 28; formaldehyde, 3225a; formol, 2037; granosan, 2737; heat treatment, 3207; kosumin, 3425; lanstan, 550a; MBC-33, 888; mercuran, 501b; mercuric chloride, 1695; methyl bromide, 165, 888; mylone, 2599g; nemex, 156; nitrafen, 3515; parzate, 782; phascomylone, 842a; quintozene, 58c, 193b, 550a, 1180a, 1695; SD345, 1175c; sodium methyldithiocarbamate, 165, 2902; sorbic acid, 3448; sulphur, 2366; terrafun, 1176h; tersan, 1632; thiram, 58c, 2737; in combination, 501b; trapex, 1721; trichloromethylthiobenzoxazolone in combination, 193b; trichothecin, 3456; trizone, 3352; vapam, 1352, 1721; vorlex, 156, 1825; WN12, 1721; wolfen-thiuram 85, 773; see also Soil sterilization.

[Soil], *Endogone* in, in Australia and New Zealand, classification of, factors affecting, spore development of, 2592r.

—, *Erwinia aroideae* in, technique for detecting in, 3321.

—, Erysiphaceae in, in U.S.S.R., 1904.

—, *Fomes annosus* in, recovery of from soil, root invasion by, 13g.

—, fungal microflora in, factors affecting, 53.

— fungi, in Ceylon, 1090c; India, 2184a; U.S.A., 886; U.S.S.R., 1904; antagonism of, to phytopathogenic fungi, 3004; control, 861, 888, 3000; effect of buried chitin on, 263; of copper sulphur and tillex on, 1090c; of crop residues on, 2909; of dung on survival of on plant debris, 1218; of root and seed exudates on re-establishment of, in fumigated, 888; of soil fertility and moisture on lysis of hyphae of, 2624; elimination of, 2625; grasses associated with, 2184a; isolation of by soil washing, 1216; relationship between seed plants and in forest communities, 886; studying with membrane filter, 3011; symbiotic association of plant roots with, 38.

—, — imperfecti in, in U.S.A., 3681; U.S.S.R., 1904.

— fungicides, persistence of, 838.

— fungistasis in Canada, 2186; Iceland, 1464; differences in with reference to *Cochliobolus sativus*, 2185; effect of crop on, 983; relationship of to fungal spore nutrition, 12j, 3685.

—, *Fusarium* in, in U.S.A., 3681; control, 550a; development of in relation to liming, 552; effect of atrazine and simazine on development of, 2627; evaluation of media and antimicrobial agents for isolation of, 3688; factors affecting, 550b, 1288; inhibition of germination of maize seedlings under 'cold test' conditions by, 2002; lysis of cell walls of *Saccharomyces cerevisiae* by, 2188; part of spermosphere microflora, 550; reinfestation of sterilized by, 3352.

—, — *dimerum* in, in Hong Kong, incidence of in cultivated and fallow soil, 56.

[Soil, *Fusarium*] *oxysporum* in, 259; effect of *Streptomyces* on development of, 1909.

—, — — f.sp. *lycopersici* in, adaptation of to antagonistic *Streptomyces*, 3684.

—, — — f.sp. *udum* and f.sp *vasinfectum* in tolerance of to antagonistic actinomycetes and bacteria, 3683.

—, — *solani* in, alone and + *Tylenchulus semipenetrans*, effect of, on growth of lemon, 1000.

—, — — in, factors affecting timber breakdown by, 1362.

—, — — f.sp. *phaseoli* in, bean root rot associated with, 190.

—, *Gibberella fujikuroi* in, stimulating properties of, 1908.

—, *Glomerella tucumanensis* in, effect on antagonistic actinomycetes and bacteria on, 3683.

—, *Heterosporium allii* in, effect of pH on growth and sporulation of, 54.

—, *Humicola* in, detoxication of, by, 887.

—, *Macrophomina* in, non-occurrence of, in newly cleared, 1288.

—, — *phaseoli* in, tolerance of to antagonistic actinomycetes and bacteria, 3683.

—, *Malustela aeria* in, production of auxins by, 889.

—, manganese deficiency in, control, 3592.

—, Microbiology of podzol, manual on, 51.

— micro-organisms in U.S.S.R., 1220, 2999; effect of dexon on, 12f; of germinating seeds on, 549; of herbicides on, 2601; of organic amendments on, 3686; of plant cover on, 1467; of soil treatment on, 1468; estimation of activity of, 548; of, on infectivity of *Ophiobolus graminis* to wheat, 1219; factors affecting, 1220; new and rare forms of, Russian monograph on, 1466; on woollen textiles, 3658; validity of test for determining antagonism between, 12i.

—, *Mortierella* in, in U.S.S.R., 3681; detoxication of, by, 887; factors affecting, 1288.

—, *Mucor* in, factors affecting, 550b; non-occurrence of in newly cleared, 1288.

— mycostasis, see soil fungistasis.

—, *Neocosmospora africana* in, production of auxins by, 889.

—, *Oospora pustulans* in, isolation of, 2096.

—, *Ophiobolus graminis* in, effect of *Streptomyces* on development of, 1909; increased incidence of in freshly cleared, 1907.

—, *Paecilomyces fusisporus* in, in India, distribution of in relation to grasses, 2184b.

—, *Penicillium* in, 361; in Australia, 1217; U.S.S.R., 3681; control, 1217; detoxication of, by, 887; factors affecting, 53, 550b, 1217, 1288; re-establishment of in fumigated, 888, in relation to damping-off fungi, 550a; stimulating properties of, 1908.

—, — *crustosum* in, antagonism of to *Corticium solani*, 3682.

—, — *janthinellum* in, factors affecting timber breakdown by, 1362.

—, — *lilacinum* in, stimulating properties of, 1908.

—, — *urticae* on, antagonism of to *Corticium solani*, 3682.

—, — *vinaceum* in, in Australia, 1217.

—, *Phoma* in, factors affecting, 1288.

—, phycomycetes in, in U.S.S.R., 1904.

—, *Phytophthora* in, medium for isolation and enumeration of, 12k.

[Soil, *Phytophthora*] *megasperma* in, in Germany, 1906.
—, — *nicotianae* var. *parasitica* in, 134; effect of soil moisture and temp. on survival of, 1854a.
—, *Polyporus schweinitzii* in, 3212a.
—, *Pseudomonas* in, detoxication of by, 887; inhibition of *Pestalotia macrotricha* and *Trichoderma viride* by fungistatic principle, 3003; production of antibiotic principle by, 3683.
—, — *solancearum* in, techniques for detecting, 1862.
—, *Pythium* in, in Hong Kong, 56; U.S.S.R., 60; antagonism of to bacteria and fungi, 60; control, 550a; detection of, 890; factors affecting, 550b; incidence of in cultivated and fallow soil, 56; longevity of oospores of, 1469; part of spermosphere microflora, 550; reinfestation of sterilized, 3352.
—, — *aphanidermatum* in, 259; effect of oil cakes on, 2628; of soil moisture and temp. on survival of, 1854a.
—, — *arrhenomanes* in, control, 3351.
—, — *ultimum* in, effect of quintozene on, 57.
—, *Rhizoctonia* in, in Hong Kong, 56; effect of soil treatment on, 1468; incidence of in cultivated and fallow soil, 56; reinfestation of sterilized, 3352.
—, *Rhizopus* in, 361; non-occurrence of in newly-cleared, 1288.
—, — *stolonifer* in, effect of atrazine and simazine on development of, 2627.
—, Saprolegniaceae in, factors affecting, 550b.
—, sclerotial fungi in, study on, 58.
—, *Sclerotinia minor* in, effect of CO_2 on, 58b.
—, *Sclerotium* in, factors affecting, 1288.
—, — *rolfsii* in, ecological study of, 2189; effect of paraquat on, 3655.
—, *Sporotrichum* in, non-occurrence of, in newly cleared, 1288.
—, sterile fungus in, lysis of cell walls of *Saccharomyces cerevisiae* by, 2188.
— sterilization against *Colletotrichum coccodes* on tomato, 231k; *Longidorus elongatus*, 2406; *Phoma apiicola* on celeriac, 2914.
— —, see also Soil disinfection.
—, *Streptomyces* in, adaptation of *Fusarium oxysporum* f.sp. *lycopersici* and *Trichometasphaeria turcica* to, 3684; antagonism of to *Itersonilia pastinacae*, 3296; effect of on development of phytopathogenic soil fungi, 1909.
—, — *ahygroscopicus* in, in China, production of antibiotic effective against *Puccinia* on wheat by, 1878.
—, — *scabies* in, increased incidence of in freshly cleared, 1907.
—, *Thielavia terricola* in, in India, distribution of in relation to grasses, 2184b.
—, *Thielaviopsis basicola* in, in U.S.A., 2946a; behaviour of chlamydospores and endoconidia of, 3350; chlamydospores of as surviving propagules in, 260; effect of *Streptomyces* on development of, 1909; virulence of to tobacco, 2946a.
—, *Tilletia contraversa* in, survival of spores of, 1251.
—, tobacco rattle virus in, in N. Ireland, 4d; transmission of by vectors, 285.
—, *Trichoderma* in, 361; antagonism of, to *Corticium solani*, 3682; development of in relation to liming, 552; factors affecting, 550b, 1288; in relation to damping-off fungi, 550a; reinfestation of sterilized, 3352.
[Soil, *Trichoderma*] *viride* in, factors affecting timber breakdown by, 1362; re-establishment of in fumigated, 888; role of nutrients and pH in reversing fungistasis of conidia of, 3686.
—, *Trichometasphaeria turcica* in, adaptation of to antagonistic *Streptomyces*, 3684.
—, *Trichothecium roseum* in, effect of atrazine and simazine on development of, 2627.
—, *Tylenchulus semipenetrans*, alone and + *Fusarium solani* in, effect of on growth of lemon, 1000.
—, *Verticillium* in, in U.S.S.R., 1904; control, 2411; dissemination, germination, growth, and taxonomy of, 2411; non-occurrence of in newly cleared, 1288; technique for isolating, 893.
—, — *alboatrum* in, anastomosis in, 261.
*—, — *dahliae* in, in Israel, 1905; survival and saprophytic growth of, 3348.
— water terminology in mycology and plant pathology, 52.
—, *Xanthomonas musicola* in, survival of, 3645.
Solanaceae, *Agrobacterium tumefaciens* on, plastid development during tumour formation in, 1231h.
—, diseases of, application of serological methods to, 1851b.
—, fungi in rhizosphere of, in U.S.S.R., 2998.
—, *Malva* vein clearing virus can infect, 1502.
—, *Mycogone* in rhizosphere of, in U.S.S.R., 61a.
—, *Petunia* mosaic disease on, 3467.
—, *Pseudomonas solanacearum* on, comparative carbohydrate catabolism in different strs. of, 243.
—, *Robinia* mosaic virus can infect, 1346.
—, virus diseases of in Argentina, 2598.
Solanum, *Phytophthora infestans* on, in U.S.S.R., 1067.
—, potato virus X on, in U.S.S.R., breeding against, and spec. react. to, 1067.
— *acaule*, potato virus N on, differentiation of potato virus NR symptoms from, 1313.
— *demissum* as indicator for potato viruses A and X, 3168.
— —, potato virus N on, differentiation of potato virus NR symptoms from, 1313.
— *indigena*, potato viruses X + Y on, in Bolivia, effect of altitude on, 405.
— *melongena*, see Eggplant.
— *muricatum*, *Phytophthora infestans* on, in Colombia, 219.
— *nigrum*, lucerne mosaic virus on, in Queensland, 1238.
— —, stolbur virus on, 1492k; fluorescence in phloem cell walls of, 1492j.
— —, *Verticillium alboatrum* and *V. dahliae* on, 84.
— *pennelli*, *Phytophthora capsici* and *P. nicotianae* var. *parasitica* can infect, 2159h.
— *tuberosum*, see Potato.
Solubor against beet black spot, 1787.
Sonchus oleraceus, *Bremia lactucae* on, effect of temp. on sporulation of, 1445.
— —, lucerne mosaic virus on, in Queensland, 1238.
SOPP against *Rhizopus stolonifer* on sweet potato, 1324.
Sorbic acid as seed treatment for cotton, 1271; as soil disinfectant, 3448.
— —, effect of on *Fusarium oxysporum* f.sp. *vasinfectum* on cotton, 1271, 3448.

L-Sorbose, effect of, on growth of *Botrytis*, 256; on plant pathogenic fungi, 542.
**Sordaria allahabadensis* on papaw in India, 2079.
— *macrospora*, factors affecting development of perithecium of, 3338a.
— —, quantitative and qualitative effects of light on spore discharge in, 3338b.
Sorghum (*Sorghum vulgare*), *Aspergillus* on stored seed, control, 313.
—, bibliography of world literature, 1930–1963, 3089.
—, *Cochliobolus sativus* on, in the Philippines, 2693.
—, *Colletotrichum* on, diseases of, and *Fusarium* on, in Mexico, 987.
—, *Fusarium roseum* f.sp. *cerealis* and *Gibberella fujikuroi* on, in Nigeria, 2007.
—, *Helminthosporium pedicellatum* on, in U.S.A., 2000.
— leaf spot virus disease in Bulgaria, incidence and transmission of, by vectors, 3041.
—, maize dwarf mosaic virus on, str. of, 975b.
—, *Penicillium* on stored seed of, control, 313.
—, *Periconia circinata* on, crystallization of host-specific toxin from, 311; multiple host-specific toxins from, 3090.
**—, *Phyllosticta sorghiphila* on, 989.
—, *Pseudomonas sorghicola* on, in India, 3632e.
—, *Pythium arrhenomanes*, *P. debaryanum*, and *P. graminicola* on, in Mexico, 987.
—, *Ramulispora sorghi* on, in W. Africa, 312.
— red stripe virus on sorghum in U.S.S.R., symptoms of, 923.
—, *Rhizoctonia* on, in Mexico, 987.
—, *Sclerospora sorghi* on, in Nigeria, 990; U.S.A., 2947a; var. react. to, 2008.
—, *Sphacelia sorghi* on, in Nigeria, 991.
—, *Sphacelotheca cruenta* on, 2 types of infection in, 1261.
—, — *reiliana* on, genetics of and var. react. to, 988; specificity of, 602, 1260.
—, *Verticillium alboatrum* on, 2009.
—, *Xanthomonas rubrisorghi* on, in India, 1262, 3632e.
Sorghum dochna, (?)maize dwarf mosaic virus on, in U.S.A., hosts of, 2006.
— *halepense*, *Helminthosporium rostratum* on, in India, hosts of, 3632d.
— —, (?)maize dwarf mosaic virus on, 2006; in U.S.A., 975a, 3411; differentiation of strs. of, 975a; overwintering of, on, 3411; reservoir for, 975b, 3081; transmission of by vectors, 3081.
— —, — mosaic virus on, in Yugoslavia, host range, characteristics, and physical properties of, (?)str. of sugarcane mosaic virus, 2221.
— —, *Sphacelotheca cruenta* on, 1261.
— —, sugarcane mosaic virus *Sorghum halepense* str. on, in U.S.A., 2005.
— *sudanense*, see Sudan grass.
— *vulgare*, see Sorghum.
Sowbane, see also *Chenopodium murale*.
— mosaic virus on *Chenopodium murale*, 3705; identical with apple latent virus, 3022.
Soybean (*Glycine max*), *Arabis* mosaic virus can infect, 2932.
—, *Ascochyta sojaecola* on, in U.S.S.R., 1513i.
—, *Aspergillus flavus* on, 3284; production of aflatoxin by, 1455.
—, — *glaucus* on stored, factors affecting, 3284.
—, bacteria on, migration of, 1415.
[Soybean], bean yellow mosaic virus on, U.S.S.R., 1142.
—, *Cephalosporium gregatum* on, in Mexic U.S.A., 2897; control by crop rotatio 2139; effect of, on yield, 2139; incidence 2897; similarity of isolate from clover t 3634j; symptoms of, 197.
—, *Cercospora kikuchii* on, in U.S.A., 11 *Venezuela, 3283; association of wi tobacco ring spot virus, 1156; growth 1803; incidence of, 3283.
—, — *sojina* on, effect of on P_{32}, pigment, a starch in leaves of, 198; of, on, 199.
—, *Corticium solani* on, 2104.
— diseases in U.S.A., account of, 2894.
—, effect of fungicides on germination of, 28
—, *Fusarium oxysporum* on, in U.S.S.R., 15
—, *Gliocladium roseum* on, in U.S.S.R., 36
—, Leguminosae witches' broom virus o 724.
—, lucerne mosaic virus on, in Czechoslovaki 2766.
— mosaic virus on soybean in U.S.A., react. to, 1802; electron microscopy 1155; purification of, 2895.
—, *Nematospora coryli* on, transmission of vectors, 1804.
—, *Penicillium* on stored, factors affecti 3284.
—, *Peronospora manshurica* on, in U.S.S.R 1513i.
—, *Phytophthora cactorum* on, cross-protectio against *P. megasperma* var. *sojae* confer by, 2569.
—, — *megasperma* var. *sojae* on, cro protection against *P. cactorum*, 2565.
—, *Pseudomonas fabae* on, in U.S.S.R resistance to, 486.
—, — *glycinea* on, in Argentina, 2899; Yug slavia, 2900; biochemistry of, 2900; cha acters of, 2899; morphology of, 290 physiologic races of, 200; *P. tabaci* a *Xanthomonas phaseoli* var. *sojense* sometim associated with, 2899; symptoms of, 289 2900; technique for determining pathoge races of, 201; transmission of by plant litt and seed, 2899; var. react. to, 200.
—, — *tabaci* on, in Argentina, characters a symptoms of, *P. glycinea* and *Xanthomon phaseoli* var. *sojense* sometimes associat with, transmission of by plant litter and see 2899.
—, red clover mottle virus can infect, 141.
— rosette virus in Formosa, symptoms, tra mission of by vectors, 235c.
— rugose mosaic virus on soybean, in U.S.S.R factors affecting incidence of, 2568.
—, *Sclerotinia sclerotiorum* on, in U.S.S.R 1513i.
—, *Sclerotium rolfsii* on, in U.S.A., 2946b.
— storage fungi, factors affecting increase invasion by and fat acidity values of, 2896.
—, tobacco ring spot virus on, in U.S.A association of *Cercospora kikuchii* infecte seeds and stunting with, 1156.
—, tomato black ring virus on, in German 1823.
—, *Verticillium alboatrum* on, 2792.
— virus disease in E. Africa, severity of, tran mission of by grafting or mechanicall 2941b.
— white clover mosaic virus on, in Czech slovakia, 2761.

ybean] witches' broom virus on soybean, comparison of with groundnut rosette virus, 2941b.
Xanthomonas phaseoli var. *sojense* on, in Argentina, 2899; U.S.S.R., 487; characters and symptoms of, *P. glycinea* and *P. tabaci* sometimes associated with, 2899.
yellow mosaic virus on soybean in U.S.S.R., factors affecting incidence of, 2568.
hacelia sorghi on maize, *Panicum maximum*, *P. miliaceum*, and sorghum, 991.
haceloma cardamomi on *Elettaria cardamomum*, 1061.
hacelotheca cruenta on sorghum and *Sorghum halepense*, 1261.
—, survival of under mineral oil, 903.
destruens on *Panicum miliaceum*, see *P. miliaceum*.
—, toxicity of aromatic and heterocyclic derivatives to, 1871b; of coke chemicals to, 532.
reiliana, electron microscopy of surface of chlamydospores of, 3009.
— on maize, see Maize.
— on sorghum, 602, 988, 1260.
— on Sudan grass, 1260.
— and *S. sorghi*, survival of under mineral oil, 903.
phaerella sumacis on *Rhus typhina*, 2083.
phaeriaceae, associated with *Acacia mucronata* cankers, 1339.
Sphaeronema sesami on sesame, 705.
phaeropsis tumefaciens on citrus, 3435.
phaerotheca fuliginea on **Adonis vernalis*, 1604.
— on cucumber, see Cucumber.
— on Cucurbitaceae, 3301.
— on melon, 214, 3301.
—, taxonomic revision of, 1229.
— f.sp. *dahliae* on *Dahlia variabilis*, 3459.
humuli, see *S. macularis*.
macularis in the air over hop fields, 3523.
— on *Fragaria chiloensis* and *F. ovalis*, 145.
— on raspberry, 2478.
— on rose, 2173.
— on strawberry, 2781, *3512.
mors-uvae on currant, see Currant.
— on gooseberry, 697, 2283, 3335.
pannosa, control, 3634.
— on apricot, 2273.
— on peach, 2273, 2470.
— on rose, see Rose.
Sphaerulina maydis on maize, 3632.
Sphagnum moss, isolation of damping-off inhibitor from, 32.
Spicaria farinosa and *S. fumoso-rosea*, culture of, 1425.
Spider, *Hymenostilbe kedrovensis* on, description of, 3648.
Spilocaea oleagina, effect of Ca cyanamide on, 2370a.
— on olive, 2290.
Spinach (*Spinacia oleracea*), beet leaf curl virus can infect, 785a.
—, *Colletotrichum coccodes* and *C. dematium* on, 186.
—, cucumber mosaic virus on, var. react. to, 2594c.
— mosaic virus on spinach in Japan, relationship of to beet mosaic virus, 2129.
—, parsnip yellow fleck virus on, accumulation of in leaves of, 3311g.
—, *Peronospora farinosa* on, in Finland, 1508.
Spinacia oleracea, see Spinach.
Spongospora subterranea on potato, 409, 1844.
Spores, their dormancy and germination, monograph on, 1408.
Sporonema phacidioides on lucerne seed, 2765.
Sporotrichum pruinosum on fibreboard, 179.
Spraying apparatus, 2m, 458, 1051, 1529, 1869, 2608, 2933.
Spritzcuprol 45, see Cu oxychloride.
Spruce (*Picea*), *Armillaria mellea* on, in Canada, 158b.
—, *Botryosphaeria piceae* on, in Canada, 158f.
—, *Botrytis cinerea* on, in Canada, 1128.
—, *Cenococcum graniforme* on, forming mycorrhiza in India, 1440.
—, *Chrysomyxa abietis* on, in U.S.S.R., 1131.
—, — *empetri* on, in Canada, 158e.
—, — *ledi* on, in Canada, 158e; U.S.S.R., association of *Ledum palustris* with, 1131.
—, — — var. *rhododendri* on, in Austria, 1130.
—, — *ledicola* on, in Canada, 158e.
—, *Coniophora puteana* on, in U.S.A., 2847c; effect of nitrite on, 2863.
—, *Corticium radiosum* on, in U.S.A., 2847c.
—, — *solani* and *Cylindrocarpon* on seeds and seedlings of, control, factors affecting, 2108a.
—, *Fomes annosus* on, in Lithuania, 1360; U.S.S.R., 2124; control, 1360; effect of on trunk growth, 2124; factors affecting, 1764, 2864; incidence of, 1360; inhibition of by nitrite, 2863.
—, — — f.sp. *multistrata* on, 1132.
—, — *nigrolimitatus* and *F. pini* on, in U.S.A., 2847c, 3238.
—, — *pinicola* on, in U.S.A., 2847c.
—, *Gliocladium roseum* on seeds and seedlings of, control and factors affecting, 2108a.
—, *Hypoderma mexicanum* on, 2847f.
—, *Lenzites saepiaria* on, in U.S.A., 2847c.
—, *Lophodermium macrosporum* on, in U.S.S.R., 1131.
— mottle virus on spruce in Europe, 442.
—, mould fungi on seeds of, inhibition of by UV radiation, 3224.
— mycorrhiza in Finland, 245a, 1205; effect of soil disinfectants on, 1889; vertical distribution of, 1205.
—, pathology experiments on, 440a.
—, *Penicillium* on, effect of nitrite on, 2863.
—, *Pholiota alnicola* on, in U.S.A., 2847c.
—, *Polyporus tomentosus* on, in Canada, 158b, 1133.
—, — — var. *circinatus* on, in U.S.A., 2847c.
—, *Polystictus triqueter* on, in U.S.S.R., symptoms of, 3239.
—, 'psychrophilic' seed fungus on, growth of, in culture, 2592p.
—, *Pucciniastrum padi* on, *Prunus padus* density associated with, 2331.
—, *Retinocyclus abietis* on, in Canada, 3582.
—, *Scleroderris lagerbergii* on, in Canada, 3237; *Netherlands, 1361.
— smoke injury in Czechoslovakia, needle colour indicates degree of, 1881.
—, *Stereum abietinum* on, in U.S.A., 2847c.
—, — *sanguinolentum* on, in U.S.A., 2847c; effect of nitrite on, 2863.
—, — *sulcatum* on, in U.S.A., 2847c.
—, *Trichoderma* on, effect of nitrite on, 2863.
Squash (*Cucurbita maxima*), blackberry mosaic virus can infect, 2947d.
—, cherry tatter leaf virus can infect, 671.

[Squash, cherry] (sweet) virus can infect, 380.
—, cucumber mosaic virus on, conc. of, 1393.
—, *Erysiphe cichoracearum* on, control, 3300.
—, **Fusarium solani* f.sp. *cucurbitae* on, in Brazil, 2577.
— mosaic virus, comparative studies of pumpkin mosaic virus and, 13n.
—, prune dwarf virus on, infectivity of homogenates of, 3382.
—, *Pseudoperonospora cubensis* on, control, 3300.
— virus diseases, control of insect-borne by Al foil, 215.
—, watermelon mosaic virus on, conc. of, 1393.
Stachybotrys atra as test fungus, 1200.
— —, decomposition of methyl cellulose by, 551.
— —, growth of *Pythium oligandrum* with on cellulose film, 59.
Stachys arvensis, lucerne mosaic virus on, in Queensland, 1238.
Stachytarpheta indica virus disease, possible relationship to coconut root (wilt) disease and areca palm yellow leaf disease, 712.
Stagonospora curtisii on *Crinum* × *powellii* and **Nerine angustifolia*, 658.
— — on *N. bowdenii*, *658, 1618.
*— — on *Zephyranthes grandiflora*, 658.
*— *paspali* on *Paspalum notatum*, 9.
Staphylococcus aureus on radish, 2177.
Steam/air treatment against *Ascochyta pisi* and *Mycosphaerella pinodes* on pea, 1378; *Itersonilia pastinacae* on parsnip, 1161; *Pezicula* on apple, 3134.
Steganosporium sirakoffi on mulberry, 3217.
Stellaria media as reservoir for tobacco rattle virus, 572.
— —, raspberry ring spot and tomato black ring viruses on, transmission of, by vectors, 2406.
Stemphylium botryosum on *Capsicum*, 2600h.
— — f.sp *lycopersici* on tomato, 742.
*— *floridanum* on *Chrysanthemum*, 3384.
— *loti* on *Lotus corniculatus*, 3384.
— *nabarii* on *Chrysanthemum cinerariaefolium*, 344.
— *radicinum* on carrot, 1160, 1810.
— *sarciniforme* not causing brown leaf spot of lucerne in Germany, 1027.
— — on clover, 3034.
— — on lucerne, 3121.
— — on lupin, 1030.
— *solani*, ergosterol and UV requirement for production of conidia of, 3676.
— — on tomato, 1740.
Stenotaphrum secundatum, *Pyricularia grisea* on, amino acids and amides in relation to and var. react. to, 2945c.
Stereoscan electron microscope, 2399.
Stereum in India, monograph on genus, 897.
— *abietinum* on spruce, 2847c.
— *hirsutum*, effect of volatile fungal metabolites on, 49.
— — on timber, 2865b.
— — on vine, 2586.
— *purpureum* on apple, 672.
— — on fruit trees, 3482.
— — on nectarine, 3504.
— — on peach, see Peach.
— — on plum, 672, 673a.
*— — on stone fruit, 1945a.
— *radiatum* on timber, 2865b.
[*Stereum*] *sanguinolentum* on pine, see Pine.
— — on spruce, 2847c, 2863.
— — on timber, 173d.
— *sulcatum* on spruce, 2847c.
Stigmina carpophila on apricot, 1513r.
— — on stone fruit, 2065.
Stolbur virus on *Capsicum*, 830.
— — on *Datura*, 1492j.
— — on *Datura stramonium*, 1492k.
— — on eggplant, 830, 1492j.
— — on *Nicotiana glauca*, 1492k.
— — on *Petunia*, 3374.
— — on potato, see Potato.
— — on *Solanum nigrum*, 1492j.
— — on tobacco, 733, 3374.
— — on tomato, see Tomato.
Stone fruit, *Armillaria mellea* on, popu account of control and symptoms of, 27
— — diseases, booklet on, 3480; key to sy toms, 2065.
*— —, *Phytophthora cactorum* on, in C 1945a.
— —, *Pseudomonas* on, comparison of with on various hosts, 1422.
— —, — *cerasus* on, in U.S.S.R., resemblan of external symptoms of to *Erwinia amy vora*, 3509.
— —, — *syringae* on, symptoms of, 2273.
— —, *Sclerotinia fructicola* on, control, 376.
*— —, — *laxa* and *Stereum purpureum* on, Chile, 1945a.
— —, *Stigmina carpophila* and *Taphrina defo mans* on, key to symptoms, 2065.
*— —, *Tranzschelia pruni-spinosae* var. *disco* on, in Chile, 1945a; key to sympto 2065.
— —, *Valsa* on, in U.S.S.R., 1513q.
*— —, *Verticillium alboatrum* on, in Ch 1945a.
— —, — *dahliae* on, in U.S.S.R., 2066; fact affecting, 2066.
— — virus diseases in Poland, 1644.
' Stop scald,' see Ethoxyquin.
Storage disorders of apple, 1036; barley, 154 beet, 472, 1141; *fruit, 465; groundnut, 214 potato, 402a; *vegetables, 465.
Straw, *Alternaria*, *Penicillium*, *Stachybotry* and *Trichoderma* on, control, 2376.
Strawberry (*Fragaria vesca*), *Arabis* mos virus on, 2354k; in *Irish Republic, tra mission of by vectors, 3144.
—, B deficiency in, symptoms of, 3145.
—, *Botrytis* on, 3629f; in England, 231 control, 231b, c, 2287.
—, — *cinerea* on, in Canada, 2478; Englan 2354f; Finland, 3314; Germany, 6, 184 Irish Republic, 1051; Poland, 1074; apparat for spraying, 1051; control, 5a, 231d, 10 1302a, b, 1673, 2354f, n, 2369t, 2478, 24 2480; effect of fungicides on flavour canned, 2369t; effect of, on yield, 6; penetr tion by, 2457b; severity of, 3311a; stimulati of spore germination in, 3311a; susceptibili of ripe fruits to, 3311a; timing of spr schedules against, 3311b.
—, Ca deficiency in, symptoms of, 3145.
— chlorotic spot virus on strawberry Germany, (?) relationships of, to strawber crinkle virus, transmission of by vecto 1671.
—, clover phyllody virus on, in Rumania, 347
—, — — —, see also Strawberry green pe virus.

trawberry], *Colletotrichum acutatum* on, characteristics of, 370.
- crinkle virus on strawberry in U.S.S.R., indicator clone for, 2286; chemicals ineffective against, 1048.
-, *Dendrophoma obscurans* on, in U.S.S.R., 1050.
-, *Diplocarpon earlianum* on, in Canada, 2478; Poland, 2074; U.S.S.R., 1050, *1663; breeding against, 1050; control, 2478; symptoms of, 1663; var. react. to, 1050.
- diseases in Canada, bulletin on, 698; tables of fungicides against, 2171.
-, *Fusarium oxysporum* on, in Queensland, f.sp. *fragariae* proposed for, 384.
—, *Gnomonia fructicola* on, in Israel, 3512.
- green petal virus on clover, 1635.
— — — —, see also Clover phyllody virus.
—, *Hainesia* on, in New S. Wales, 1944.
—, — *lythri* on, in India, symptoms of, 699.
-, iron deficiency in, symptoms of, 3145.
- latent C virus on strawberry in Canada, 2478; inactivation of by heat treatment, 3511.
— — ringspot virus on clover, 360.
— — — — on currant, 2282.
— — — — on *Narcissus*, 1278.
— — — — on peach, 2275.
— — — — on plum, 2345j.
— — — — on rhubarb, 3302.
— — — — on strawberry in Europe (W.), 3311j; transmission of, 2592j.
—, magnesium and manganese deficiencies in, symptoms of, 3145.
— mild crinkle virus on strawberry in Netherlands, technique for separating from complex, 1300.
— — yellow edge virus on strawberry in Netherlands, technique for separating from complex, 1300; chemicals ineffective against, 1048.
— mottle virus on strawberry in Canada, 2478; non-retention of by vectors, 1049.
—, *Mycosphaerella fragariae* on, in Canada, 2478; Poland, 2074; U.S.S.R., 1050.
—, N and P deficiencies in, symptoms of, 3145.
—, *Phyllosticta fragaricola* on, in U.S.S.R., symptoms of, 1663.
—, *Phytophthora cactorum* on, in France, 1672, 2596; penetration by, 2457b.
—, — *fragariae* on, in Switzerland, 1846; U.S.A., 2075; U.S.S.R., 700, 1513s; control, 700; physiologic races of, 386, 2075, 2076; var. react. to, 2076.
—, potassium deficiency in, symptoms of, 3145.
—, *Rhizopus stolonifer* on, control, 1302b.
— root rot in Canada, *Rhizoctonia fragariae* associated with, 2478.
—, *Sclerotinia sclerotiorum* on, in Scotland, 1301.
—, *Sphaerotheca humuli* on, control, 2781.
—, — *macularis* on, in Israel, 3512.
—, S deficiency in, symptoms of, 3145.
—, *Typhula* on, factors affecting, 3514.
— veinbanding virus on strawberry in Canada, 2478; inactivation of by heat treatment, 3511; non-retention of by vectors, 1049.
—, *Verticillium* on, in Canada, 2478; free amino acid content in relation to, 2782.
—, — *alboatrum* on, in U.S.S.R., 3515; var. react. to, 2783.
—, — *dahliae* on, resistance to, 385.
—, *Zythia fragariae* on, in *England, 3513; Poland, 2074; imperfect state of *Gnomonia fructicola*, 3513.
Streptocycline, inhibition of bacteria by, 1197.
Streptomyces strs. B.64, B.81, and B.128, production of actidione by, 533.
— *ahygroscopicus* in soil, 1878.
— *anandii*, production of pentaene g_8 by, 534.
— *griseus*, effect of on fungi, 1853.
— *ipomoea* on sweet potato, 2305.
— *scabies* in soil, 1907.
— — on potato, see Potato.
Streptomycetes, systematics, of, with reference to antibiotics, monograph on, 3010.
Streptomycin against *Peronospora viciae* on pea, 2938c; *Pseudomonas syringae* on cherry, 1045; *Xanthomonas oryzae*, 235k; as seed treatment for bean, 3277.
—, assimilation of, in plants, 3650.
—, effect of night applications of, on *Erwinia amylovora* on apple, 3499.
—, toxicity of, to pea, 2938c.
— sulphate against *Candida intermedia*, *Penicillium chrysogenum*, and *Saccharomyces cerevisiae*, 2970.
— —, effect of on sclerotial development and germination of *Claviceps microcephala* on *Pennisetum typhoideum*, 2709.
Streptothricin, assimilation of in plants, 3650.
Strepzyme RA, regeneration of mycelial protoplasts of *Fusarium culmorum* by, 1450.
Striga, *Alternaria* and *Cercospora* on, 14.
—, *Oidium* on *Cicinnobolus* parasitizing, 14.
—, *Phoma* on, 14.
— *lutea*, *Cercospora* on, 14.
Strumella coryneoidea, imperfect state of *Urnula craterium*, on oak, 3219.
Stysanus stemonitis on packing material, 1370.
Succinic acid against *Urocystis cepulae* on onion, 2668.
— — for detecting *Erwinia atroseptica* on potato, 1703.
Sudan grass (*Sorghum sudanense*), *Helminthosporium rostratum* on, 3632d.
— —, sorghum red stripe virus on, in U.S.S.R., symptoms of, 923.
— —, *Sphacelotheca reiliana* on, specificity of, 1260.
Sugar, to stabilize Bordeaux mixture, 1433.
— beet, see Beet.
Sugarcane (*Saccharum officinarum*), *Ceratocystis paradoxa* on, *in India, 2507; control, 1710d.
—, *Cercospora koepkei* on, in Queensland, 1710a.
—, — *longipes* on, in Hawaii, 2100a.
— chlorotic banding in Puerto Rico, 1096.
— — streak virus in Mauritius, transmission of, 3188d.
—, *Claviceps purpurea* on, germination of sclerotia, 1716.
—, *Cochliobolus stenospilus* on, in Puerto Rico, genetics of resistance to, 1095.
—, *Cytospora sacchari* on, in Mexico, 1094.
— diseases in Argentina, 2598.
— Fiji virus on sugarcane, epidemiology and control of, 2j.
—, fungi in rhizosphere of, in Trinidad, 3190.
—, *Gibberella fujikuroi* on, 513; in Mauritius, severity of, 3188c.
—, *Glomerella tucumanensis* on, in Hawaii, 2100c; effect of hexose phosphates and UV irradiation on sporulation of, 729; of nutrients on conidial germination of, 3556; of soil extract on conidial germination of,

731; resistant mutant of, 1715; technique for testing for resistance to, 2100c; use of biochemical mutants for bioassays, 728.
[Sugarcane] grassy shoot virus on sugarcane, control, 3555.
—, *Helminthosporium sacchari* on, absence of, in S. Queensland, 1710a.
—, *Lagenidium* on, stagnant water causing root infection by, 1708c.
— leaf galls in S. Afr., (?)insect or physiological, resemblance of to Fiji disease virus, 1708d.
*—, *Leptosphaeria sacchari* on, in Sarawak, 2358d.
—, *Leucoporus sacchari* on, in Formosa, 732, 2817.
— mosaic virus on maize, 976.
— — — on *Sorghum halepense*, 2221.
— — — on sugarcane, effect of heat treatment on, 1712; of roguing on, 2099; genetics of, 2506; strs. of, 1711; transmission of by vectors, 1712; var. react. to, 513, 1708b, 2506.
— — — strs., world survey of, 727.
— — —, *Sorghum halepense* str. on *S. halepense*, 2005.
—, *Puccinia erianthi* on, new physiologic race of, 3557.
—, — *kuehnii* on, in Réunion, 1179.
—, *Pythium* on, in Hawaii, 2100d.
—, — *arrhenomanes* on, 2818; effect of antagonistic actinomycetes on, 83.
—, — *catenulatum* and *P. mamillatum* on, 2818.
— ratoon stunting virus on sugarcane in India, 1178c; Queensland, 1710a; assay technique and partial purification of, 1713; control, 3555; effect of hot water treatment on, 2816; factors affecting, 1710a; non-transmission of by seed, 13c.
—, *Sclerospora macrospora* on, in S. Africa, 2307.
—, — *sacchari* on, in Formosa, 235g.
— striate mosaic virus on sugarcane in Queensland, 3187; not transmitted mechanically, 1710b.
—, *Ustilago scitaminea* on, in Kenya, 3189; effect of soil temp. on infection by, 2819; sexuality in, 1714; var. react. to, 2508, 3189.
— virus diseases, control, 2i; effect of heat treatment on, 2941b.
— Wartburg disease in S. Afr., unidentified fungus causing, 1717.
—, *Xanthomonas albilineans* on, 513; in Hawaii, 2100b; Mauritius, 3188a; Puerto Rico, 2820; Queensland, 1710a; Rhodesia, 1708a; S. Africa, intercepted from Argentina, 1708; Tanzania, 1709; effect of, on, 3188a; factors affecting, 1710a; method for testing var. react. to, 1710c; var. react. to, 1708a.
—, — *vasculorum* on, in Mauritius, 3188a, b; distinction between strs. of, 3188b; effect of, on, 3188a.
Sulikol against *Puccinia graminis*, *P. recondita*, and *P. striiformis* on wheat, 3046.
Sulphanilamide, effect of, on *Cochliobolus miyabeanus*, 1436.
Sulphate, effect of, on resistance of peach to *Fusicoccum amygdali*, 378.
Sulphonamides, assimilation of, in plants, 3650.
Sulphur against *Cerotelium fici* on fig, 3151; *Corticium solani* on *Hevea* rubber, 2306; *Erysiphe graminis* on barley, 528; *Fomes lignosus* on *Hevea* rubber, 1090c; *Oidium* c orange, 615; *Uncinula necator*, 2369l *Uromyces viciae-fabae* on lentils, 20 vectors of blackcurrant reversion viru 3138; as soil disinfectant, 2366.
[Sulphur] deficiency in avocado pear, 3149; strawberry, 3145; in vine, 2931c.
—, effect of, on lesions of sunnhemp mos virus on *Cyamopsis psoraloides*, 3604; *Phytophthora infestans* on potato, 149; soil fungi, 1090c.
— versus Cu, 1032b.
— in combination against *Alternaria pl septata* on cucumber, 1167; *Corticium so* on *Hevea* rubber, 2306; *Erysiphe cich cearum* on squash, 3300; *Plasmopara viti* 2155; *Podosphaera leucotricha* on ap 2264, 3493; *Pseudoperonospora cubensis* squash, 3300; *Sclerotinia fuckeliana* a *Uncinula necator* on vine, 2155; *Ventur inaequalis*, 2263.
— — —, toxicity of to apple, 2264.
— versus daconil-2787, 2369b.
—, colloidal, against *Kabatiella caulivora* clover, 668; *Phyllactinia suffulta* on mulber 1112; *Podosphaera leucotricha*, 2459, 349
—, —, in combination against *Kabatiel caulivora* on clover, 668; *Podosphae leucotricha*, 1650.
— dioxide against *Botrytis cinerea* on grape 2934.
— — injury to plants, 1882.
— — +ozone causing tobacco injury, 153.
Sulphuric acid as seed treatment for cotto 2433.
— —, effect of on spore germination *Urocystis cepulae*, 3290.
Sumithion in combination against vectors potato leaf roll virus, 715.
Sunflower (*Helianthus annuus*), *Cystopus trag pogonis* on, differentiation of from *C. t.* *Tragopogon pratensis*, new form of name *C. t.* f.sp. *helianthi*, 1309.
—, *Erysiphe cichoracearum* on, electr microscopic study of, 13a, 707.
—, *Macrophomina phaseoli* on, hosts o pycnidia formation in, 2295.
—, *Plasmopara halstedii* on, in France, 248 U.S.S.R., 15131; biology and taxonomy o book on, 2085; incidence, morphology, a symptoms of, 2487.
—, *Puccinia helianthi* on, in *Mauritius, 2943 effect of light and temp. on development o 2161i.
—, *Sclerotinia sclerotiorum* on, degradation pectic substances by, 42; hemicellulos degradation by, 2086.
—, *Verticillium* on, in U.S.S.R., 3659b.
— virus disease in E. Afr., non-transmission by insects and seed, transmission of grafting, 2941b; in India, symptoms of, 70
Sunnhemp mosaic virus on *Cyamopsis psor loides*, 3604.
Superphosphate in combination as seed trea ment for pine, 456.
*Swede (*Brassica napobrassica*), *Cylindr sporium concentricum* on, in Denmark, 510
—, *Plasmodiophora brassicae* on, genetics and var. react. to, 1773.
Sweet corn, see Maize.
— pea (*Lathyrus odoratus*), pea enation mosa virus on, vector relationship, 1501.
— —, red clover mottle virus can infect, 141.

sweet pea], *Verticillium dahliae* on, 2747.
- potato (*Ipomoea batatas*), *Ceratocystis fimbriata* on, effect of ethylene on enzyme activity and resistance to, 1084; enzymic changes associated with resistance to, 2505; induced immunity to, 418; resistance to, 726.
— —, *Cercospora timorensis* on, in Sarawak, 2358d.
— —, *Fusarium oxysporum* f.sp. *batatas* on, factors affecting bud cell and spore production of, 417; genetics of resistance to, 1086; overwintering of, 417; production of macroconidia and chlamydospores by, 1085; screening for resistance to, 417.
— — internal cork virus, electron microscopy of localization of, 1231c; isolation of, 1322; ribonucleic acid in, 1231b.
— — — root necrosis not caused by virus, 725; symptoms of, 725.
— —, *Monilochaetes infuscans* on, factors affecting resistance to, 1087; resistance to, 726.
— —, *Plenodomus destruens* on, in Argentina, symptoms of, 1323.
— —, *Rhizopus oryzae* on, C.M.I. description of, 1471.
— —, — *stolonifer* on, C.M.I. description of, 1471; control, 1324.
— — russet crack virus on sweet potato, effect of heat treatment on, 2097.
— —, *Sclerotium rolfsii* on, control, 2098.
— —, *Streptomyces ipomoea* on, factors affecting incidence of, 2305.
— — vein clearing virus, relationship of peroxidase activity to severity of, 3703.
— — virus diseases, effect of heat treatment on, 2941b; incidence, mode of transmission, and symptoms of, 2e.
— — witches' broom disease in Ryukyu Is., not transmitted by vectors, 724.
Swietenia leaf spot fungi, factors affecting, 1852.
Symbiosis, Vol. I, Associations of micro-organisms, plants and marine organisms, 847.
— Intermicrobial, review of bacterial, fungal, and viral symbioses, 847a.
Symposia, see Conferences and Reports.
Synchytrium ajrekari on bean, 5e.
— *endobioticum* on potato, see Potato.
Syringa vulgaris, see Lilac.
meta-iso-Systox against vectors of potato viruses A and Y, and leaf roll virus, 714.

2,4,5-T, effect of, on potato virus diseases, 2490.
Tabernaemontana coronaria leaf curl virus on *T. coronaria*, transmission of by grafting, 2046.
— — mosaic virus on *T. coronaria*, transmission of by grafting and sap, 2046.
Tagetes erecta, (?)*Pseudomonas tagetis* on, in Norway, 2446.
Talaromyces vermiculatus on roots of *Lotus corniculatus*, 3124.
Tangerine, see Orange.
Tangeritin, effect of, on *Deuterophoma tracheiphila* on orange, 2721.
Tannin as C source for *Fusarium oxysporum* f.sp. *vasinfectum* on cotton, 2159c.
Taphrina deformans on peach, see Peach.
— — on stone fruit, 2065.
— *epiphylla* on alder, 1902.
— *maculans* on turmeric, 401, 3161, 3531.
— *sadebeckii* on alder, 1902.
Tar oil B in combination against *Botrytis cinerea* on currant, 231e.
Tea (*Camellia sinensis*) branch cankers, wound dressing for, 1718a.
— centenary of Ceylon, special publication on, 3558.
—, *Cephaleuros parasiticus* on, control, 1722.
— collar canker disease in India, similarity of symptoms to *Phomopsis theae* in Ceylon, 1718b.
—, *Corticium theae* on, control, 1722.
—, *Exobasidium vexans* on, in India, 3191; Vietnam, 919; control, 1720, 3191; spore deposition and disease prediction in, 2101.
*—, *Ganoderma pseudoferreum* on, in Sarawak, 2358d.
— mosaic in Vietnam, 2200.
—, *Pestalotia* on, factors affecting, 1718c.
—, — *theae*, effect of different C and N sources on growth of, 1456a, b.
—, *Phomopsis* on, in India, 1718b.
—, — *theae* on, in Ceylon, incidence of, 1719.
—, *Poria hypolateritia* on, control, 1721.
— virus diseases, incidence, mode of transmission, and symptoms of, 2e.
—, *Xanthomonas gorlencovianum* on, effect of irradiation on biological properties of, 1723.
— yellowing in Mauritius, resemblance of to S deficiency in Malawi, 2943a.
Teak (*Tectona grandis*), *Armillaria mellea* on, in Tanzania, similarity of root disease symptoms in Sudan to, 1348.
—, *Helicobasidium compactum* on, in (?)Tanzania, 1348, 3222; spread of, 3222.
*—, *Peniophora* on, in India, old stumps as source of infection, symptoms of, 1178d.
—, *Polyporus zonalis* on, in India, symptoms of, 1178d.
— root rot in Tanzania, 1348.
Technique (see also Apparatus) for **applying** biphenyl against citrus rots, 1006; foliar fungicides, 2373; **controlling** mites in fungus culture, 3700; **culturing** bacteria, 2647; *Fomes marginatus*, 567; mycelia from mycorrhiza, 1207; plant pathogenic fungi, 2645; tropical fungi, 907; **detecting** antibiotic-producing micro-organisms against *Pythium graminicola*, 2650; *Botrytis cinerea* in flax seed, 1c; clover viruses, 2159e; *Erwinia aroideae* in soil, 3321; *Gloeotinia temulenta* on *Lolium perenne*, 1487; *Griphosphaeria nivalis* on cereal seed, 581; *Leptosphaeria maculans* on cabbage seed, 5j; *L. nodorum* on wheat, 1e; *Pseudomonas phaseolicola*, 838, 1181; *P. pisi* and *P. syringae*, 1181; *P. solanacearum* in soil and on tomato, 1862; rice stripe virus in vectors, 11h; sandalwood spike virus, 1113; timber decay, 2544; vine viruses, 2152; *Xanthomonas phaseoli*, 1181; **differentiating** fungi causing timber decay, 1364; plant virus inclusions in epidermal strips, 2400; *Pseudomonas solanacearum* on groundnut, 809; *Xanthomonas vesicatoria* on *Capsicum* and tomato, 3644; **dispersing** spores evenly on Petri dishes, 1116; **evaluating** *p*-aminobenzoic acid and biotin, 728; bactericides against *Corynebacterium michiganense* on tomato and *C. sepedonicum* on potato, 11f; *Pseudomonas mors-prunorum* on cherry, 2280; *Xanthomonas oryzae* on rice, 11f; captan residues, 27; cellulolytic activity of fungi, 1490, 1926; fungicide mixtures, 2963; fungicides against *Botrytis cinerea* on grapes, 5m; infection

periods of *Venturia inaequalis*, 1032a; pathogenic potential of population of *Puccinia graminis*, 942; phaltan residues, 27; potato virus Y necrotic str. on potato, 3172; quantity of virus synthesized by tobacco mosaic virus on tobacco, 2369n; **evaluating resistance** of lucerne to *Corynebacterium insidiosum* and *Verticillium*, 2160g; pea to *Aphanomyces euteiches*, 478; sugarcane to *Glomerella tucumanensis*, 2100c; timber to fungi, 3246; tobacco to *Peronospora tabacina*, 428a; **evaluating** seed health, 1d, 1486; soil fungus population density, 3013; **forecasting** *Mycosphaerella* on groundnut, 807; *Plasmopara viticola*, 1488; **harvesting** spores, 3337a; **impregnating** citrus wrappers with antifungal compounds, 616; **indexing** cacao virus diseases, 2599a; **inducing** oospores of heterothallic spp. of *Phytophthora*, 2397; perithecia in *Ophiobolus graminis*, 1971; premunity in plants, 539; **inducing sporulation** of *Alternaria crassa*, 3014; fungi on filter paper, 906; *Phymatotrichum omnivorum* on a defined medium, 2199; **inoculating** cotton with *Fusarium oxysporum* f.sp. *vasinfectum*, 627; *Ramularia gossypii*, 1010; elm with *Ceratocystis ulmi*, 1110; wheat with *Puccinia graminis*, 1529, 1959; **isolating** aquatic phycomycetes by membrane filtration, 3364; conifer seedbed fungi, 165; fungi on timber, 174; plant viruses, 1495; *Verticillium* from soil, 893; **marking** conidia of *Aspergillus niger*, 1232; **measuring** increase in spore size of *Trichoderma* during germination, 45; **obtaining** single-oospore cultures of *Phytophthora cactorum*, 2649; virus-free *Iris* plants, 350; zoospores in *Pythium middletonii*, 3365; **preparing** antigens from *Fomes annosus*, 904; clover wound tumour virus for electron microscopy, 3708; dried reference cultures, 3366; fungicide suspensions against *Tilletia caries*, 934; microscope slide mounts of fungi, 69; mushroom compost, 3337a; plant tissues for electron microscopy, 1489, 1925; slide cultures, 2198; **preserving** actinomycete cultures, 1491; plant pathogenic fungi, 2649; *Puccinia graminis* pycniospores, 275; slide cultures, 2198, 3366; **purifying** fruit tree viruses, 1492q; maize rough dwarf virus, 1557; poplar mosaic virus, 3212c; potato virus X, 3170; vine infectious degeneration virus, 1492r; **recording** meteorological data for disease forecasting 901; **selecting** virus free rootstock of vine, 2153; **separating** strawberry mild crinkle and strawberry yellow edge viruses, 1300; *Ustilago hordei* from barley seed, 594; viruses from mixtures, 1497; **staining** *Erysiphe betae* with iodine, 566; **sterilizing**, by electrohydraulic treatment, 902; mushroom culture media, 2151; **studying** fungi in plant tissues, 3363; interactions of soil fungi, 59; **transmitting** Gramineae viruses, 1496; orchid virus diseases, 1619.

Tecoma, *Cercospora* on, in Singapore, 1223.

Tectona grandis, see Teak.

Temik, effect of, on *Verticillium alboatrum* on potato, 1698.

Tephrosia vogelii, *Corticium solani* and *Macrophomina phaseoli* on, in Puerto Rico, testing for resistance to, 3530.

Terabol, effect of, on mycorrhiza of beech, pine and spruce, 1889.

Terfezia leonis on grasses forming mycorrhiz 3661.

Terrafun against *Streptomyces scabies* o potato, and as soil disinfectant, 1176h.

Terramycin, effect of, on *Bacillus mesenteric* on vegetable marrow, 2924; *Pseudomon lachrymans* on cucumber, 2924.

—, ineffective against *Pythium irregulare*, 5i.

Terraseal, ineffective as soil treatment agai *Phytophthora* on cacao, 1519b.

Tersan as soil disinfectant, 1632.

— OM against *Sclerotinia homoeocarpa* o *Agrostis palustris* and *A. tenuis*, 1284.

Tetrachlorethylene fungicides as seed treatm for plants, 2606.

Tetrachlorobenzol as seed treatment for pin 2327c.

Tetrachloronitrobenzene against *Fusariu coeruleum* on potato, 2806.

3,3,4,4,-tetrachlorotetrahydrothiopene-l, 1-d oxide, see DAC 649.

Tetracycline as seed treatment for pine, 232

—, effect of, on *Bacillus mesentericus* o vegetable marrow and *Pseudomonas lach mans* on cucumber, 2924.

— in combination against *Sclerotinia* on appl 2460.

Tetraene antibiotics Nos. 18–45, effect of, o toxins produced by *Verticillium dahliae* o cotton, 631.

— — 18–80, effect of, on *Verticillium dahl* on cotton, 631, 3455.

Tetragonia expansa, beet leaf curl virus ca infect, 785a.

— —, — mild yellowing virus on, 181.

— —, pea seed-borne mosaic virus on, 2560.

Tetraiodoethylene against *Erysiphe polygoni* o bean, 2600a.

Teucrium scorodonia, Fe deficiency and lim induced chlorosis in, effect of on root syste of, 2629.

Thanatephorus orchidicola, mycelia from *Rh zoctonia* on *Orchis mascula* identified as, 10

Thelephora terrestris on pine, 2848.

Thelephoraceae of N. America, reprint papers on, 1918.

Theobroma bicolor, *T. grandiflora*, and *speciosa*, cacao mottle leaf virus on, 85b.

— *cacao*, see Cacao.

Thermomyces ibadanensis on oil palm, 1066.

**Thespesia lampas*, *Xanthomonas* on, 2753.

Thiabendazole against *Cercospora beticola* o beet, 530a; *Colletotrichum musae* on banan 3147; *Corticium solani*, 838; *Diaporthe ci* and *Diplodia natalensis* on citrus, 157 *Erysiphe cichoracearum* f.sp. *cucurbitae*, 82 *Penicillium digitatum* on citrus, 1579; o orange, 1003; *P. expansum* on apple, 103 *Puccinia coronata* on *Lolium perenne*, 311 *Venturia pirina*, 530b.

—, persistence of, 530c.

— versus 2, aminobutane, 1579; dichloronitr aniline and quintozene, 838; ethyl parathio 3118.

— chlorohydrate, absorption and persisten of, 530c.

Thiazolidones, mercurated, inhibition of *Aspe gillus niger* by, 1432.

**Thielavia appendiculata* on pomegranate, 207

— *terricola* in soil, 2184b.

Thielaviopsis basicola, antagonism of so bacteria and fungi to, 3004.

— —, asexual nuclear behaviour of, 1924.

Thielaviopsis basicola], effect of Na trichlorophenate on sclerotia of, 25.
— — in soil, see Soil.
— — on bean, 2342.
— — on cotton, see Cotton.
— — on gloxinia, 652.
— — on *Lotus corniculatus*, 1029.
— — on *Phlox*, 2749.
— — on tobacco, 1843e, 2946a.
— —, pathogenicity of *Aphelenchus avenae* to, 2524.
— — + *Verticillium alboatrum* on cotton, 2740.
Thiocarbamates against *Blumeriella jaapii* on stone fruits, 375; *Venturia inaequalis*, 1032c.
Thiocarbaminic acid, fungicides derived from, 1176e.
Thiophos as seed treatment for pine, 2327a; for watermelon, 2149; for wheat, 2683.
Thiosol and thiosol 80 in combination against *Podosphaera leucotricha*, 3493.
Thiovit against *Podosphaera leucotricha* on apple, 2264.
—, toxicity of, to apple, 2264.
Thiram against *Ascochyta cucumis* on cucumber, 573h; *Botrytis* on strawberry, 2287; *B. cinerea* on strawberry, 5a, 2369t, 2479, 2480; *Colletotrichum tabacum*, 2825; *Corticium solani* on potato, 1176h; *Elsinoe veneta* on raspberry, 573a; *Fusarium* on rye, 973; *Gibberella zeae* on maize and wheat, 90; *Ovulinia azaleae* on *Rhododendron*, 2036; *Pelargonium* wilt, 1281; *Pezicula alba* on apple, 2058a; *Phomopsis mori* on mulberry, 1749; *Phytophthora* on *Capsicum*, 2358a; plant diseases, 1176d; *Pleospora bjoerlingii* and *Pythium ultimum* on beet, 182; *Scirrhia acicola* on pine, 3231; *Sclerotinia laxa* on cherry, 2474; *S. minor* on lettuce, 58c; storage disorders of apple, 1652; *Streptomyces scabies* on potato, 1176h; *Tilletia caries*, 89, 933; *T. foetida*, 933; *Venturia inaequalis*, 1032c, 1176j; as corm treatment for *Gladiolus*, 651; as seed treatment for barley, 961; for broad bean, 1801; for cereals, 1176c; for cotton, 621; for cucurbits, 2923; for *Dactylis*, 3310e; for flax, 638; for groundnut, 2571; for larch, 2327b; for lucerne, 2767; for maize, 1996; for *Panicum miliaceum*, 1871c; for pine, 2327a; for potato, 3552; for pumpkin, 1824; for sorghum, 2007; for soybean, 3601; for *Thuja plicata*, 2327b; for watermelon, 2149; as soil disinfectant, 58c, 2737.
—, bimodality of dosage response of *Glomerella cingulata* to, 2175.
—, effect of, on *Ascochyta pisi*, 1145; on *Botrytis cinerea*, 26; on flavour of canned strawberry, 2369t; on lettuce, 58c; on yield of pea, 842b.
—, inhibition of *Curvularia eragrostidis*, *Ganoderma zonatum*, and *Marasmius palmivorus* by, 3536.
—, persistence of on maize seeds, 3086.
— versus granosan, 973; mancozeb, 2825.
—, heated, as seed treatment, 2594g, h.
— in combination against *Venturia inaequalis*, 1032e; as seed treatment for beet, 184; for broad bean, 194; for cotton, 621, 1268; for pea, 1146; for wheat, 578, 2600b.
— — —, effect of on *Gibberella fujikuroi* var. *subglutinans* on pineapple, 2787.
— B, effect of on germination of soybean, 2898.
— 76 as seed treatment for pea, 3596.
[Thiram] SF 75 in combination against *Ustilago nuda* on barley, 104.
Thlaspi arvense, aster yellows virus on, 3023.
Thuja, *Didymascella thujina* on, control, 2108.
— *occidentalis*, *Didymascella thujina* on, in Germany, specialization of, 2117.
— —, *Kabatinia thujae* on, 1350.
— — and *T. orientalis*, micromycetes and *Pestalotia decolorata* var. *dichaeta* on, in Rumania, 2542.
— *plicata* damping-off in U.S.S.R., 2327b.
— —, *Didymascella thujina* on, in Germany, 2117; revised account of, 3589; specialization of, 2117.
— —, thujaplicins from, inhibiting oxidative phosphorylation, 1134.
**Thyriopsis halepensis* on pine, 158b.
Tiarsin against *Tilletia caries* and *T. foetida*, 933.
Tiezene against *Colletotrichum coccodes* on *Capsicum* and tomato, 3207; *Peronospora tabacina*, 3198.
—, see also Zineb.
Tilachlidium nigrum, effect of volatile metabolites from on gametophytes of *Pteridium aquilinum*, 3347.
Tilia, *Cercospora microsora* on, in Rumania, 763.
Tilletia, effect of X-rays on chlamydospore germination of, 932.
— *caries*, determination of surface of chlamydospores of by electron microscopy, 1967.
— — on wheat, see Wheat.
— —, teliospore morphology of, 68.
— —, toxicity of aromatic and heterocyclic derivatives to, 1871a, b; of coke chemicals to, 532.
— *contraversa*, determination of surface of chlamydospores of by electron microscopy, 1967.
— — in soil, 1251.
— —, nutrition of, 2217.
— — on wheat, see Wheat.
— *foetida*, determination of surface of chlamydospores of by electron microscopy, 1967.
— — on wheat, see Wheat.
— *nanifica* and *T. pancicii* on barley and wheat, 3407.
— *secalis* on rye, 1513c.
— *triticoides*, determination of surface of chlamydospores of by electron microscopy, 1967.
Tillex as seed treatment for barley, 3072.
—, effect of, on soil fungi, 1090c; on viability of wheat seed, 3066.
Timber, actinomycetes on, 3252.
—, *Alternaria* on, control, 1769.
—, Ascomycetes on, list of, 180; review of knowledge on, 778.
—, *Aspergillus* on, 1363.
—, *Aureobasidium pullulans* on, control, 2548; effect of timber preservatives on, 3251.
—, *Bacillus polymyxa* on, penetration by, 175.
—, bacteria on, 3252; cell wall decomposition by, 2550; microscopy of samples from disused copper mine, 776.
—, basidiomycete on, 777.
— blue stain, control, effect of on, 176.
—, *Ceratocystis* on, control, 2548.
—, *Chaetomium alba-arenulum* on, degradation by, 1363.
—, — *globosum* on, degradation by, 1363; penetration by, 175.

[Timber], *Chrysosporium lignorum* on, 2867.
—, *Coniophora puteana* on, in U.S.S.R., 2527; control, 3249; durability of, 173a; effect of, on, 1768; on properties of, 2547; use of sawdust from against *Gibberella fujikuroi* on pine, 2853.
—, *Cryptostroma corticale* on, 3240; in England, 1367.
—, *Curvularia inaequalis* on, control, 2865c.
— decay, 516g; in England, 776; fungi causing, 2333, 3252; measurement of by CO_2 output, 3247; role of N in, 780, 1368a, b; soil-block method for evaluating, 2545; technique for detecting, 2544; for distinguishing fungi causing, 1364.
—, (?)*Fistulina hepatica* on, 2543.
*—, *Fomes cinchonensis* on, in India, 775.
—, — *fomentarius* on, use of sawdust from against *Gibberella fujikuroi* on pine seedlings, 2853.
—, — *geotropus* on, activity and occurrence of arylsulphatase in, 2616.
*—, — *noxius* and *F. officinalis* on, in India, 775.
—, — *pini* on, microscopy of cell wall decomposition by, 2549.
*— — *rhabarbarinus* and *F. rudis* on, in India, 775.
—, — *tremulae* on, use of sawdust from against *Gibberella fujikuroi* on pine seedlings, 2853.
—, fungi on, 3252; in Finland, 3649; India, 3246; New Guinea, 2125; amount and distribution of N in, 780; control, 1765; detection of production of cellulase by, 173f; factors affecting, 2867; distribution of, in mines, 2543; microscopy of samples from disused copper mine, 776; nematodes attacking, 3649; resistance to, 3244; technique for determining resistance to, 3246; for isolating, 174; toxicity of extracts from, to, 3244.
—, — imperfecti on, list of, 180; review of knowledge on, 778.
—, *Fusarium* and *Gliocladium* on, 1363.
—, *Humicola grisea* on, degradation by, 1363.
—, *Hypoxylon rubiginosum* on, control, 2865b; tolerance of to preservatives, 2865b.
—, improved respirometer for measuring growth of fungi on, 173c.
—, *Irpex flavus* on, decay caused by, 1365.
—, *Lentinus lepideus* on, control, 3249; effect of on properties of, 2547.
—, *Lenzites saepiaria*, effect of on properties of, 2547.
—, — *trabea* on, 179; decay capacities of monokaryotic and dikaryotic isolates of, 2866; effect of on, 1366; on properties of, 2547; penetration by, 175; relationship of N content of and susceptibility to, 1369.
—, microbiology of, guide to, 177.
—, micro-organisms on chips of, 3252; decomposition and distribution of in pile of, 2867.
—, moulds on, control, 178.
—, nematode-destroying fungi imperfecti on, in Finland, morphological characters of, 3649.
—, *Papularia arundinis* on, control, 2865c.
—, *Penicillium* on, 1363; control, 1769.
—, *Peniophora gigantea* on, control, 173d.
—, *Pestalotia* on, penetration of by special hyphal extensions, 3242.
—, *Phialocephala phycomyces* on, effect of timber preservatives on, 3251.
—, *Phialophora fastigiata* on, control, 2865c.
[Timber], *Pleurotus ostreatus* on, 3241.
—, *Polyporus zonalis* on, 2543.
—, *Polystictus abietinus* on, effect of on, 176[illegible] use of sawdust from against *Gibberel[illegible] fujikuroi* on pine seedlings, 2853.
—, — *serialis* on, in U.S.S.R., 2527.
—, — *versicolor* on, control, 777; penetrati[illegible] by, 175; relationship of N content of an[illegible] susceptibility to, 1369.
—, — *zonatus* on, in U.S.S.R., 2527; effect o[illegible] on yield, 1768.
—, *Poria monticola* on, 2543.
—, — *vaporaria* on, effect of on properties o[illegible] 2547.
—, — *weirii* on, factors affecting survival o[illegible] 2546.
— preservation by open-tank suction proce[illegible] 1765; plastic covers, 777.
— preservation with arsenate in combinatio[illegible] 2865c; ascu 'A', 1365; Cu chrome arseni[illegible] 1765, 2865c; $CuSO_4$, 2865b; creosote, 2865[illegible] dichromate, dinitrophenol, and fluoride i[illegible] combination, 2865c; organic Hg compoun[illegible] 3251; pentachlorophenol, 178, 2865[illegible] quaternary ammomium compounds, 32.[illegible] sodium arsenate and sodium fluoride, 286[illegible] UA 11 salt and xylamon, 3249.
— preservatives, effectiveness of, 3250.
— —, evaluation of, 3249.
— —, register of, 3248.
— sapstain, control, 178.
—, *Schizophyllum commune* on, W. Afric[illegible] 2332; kinetics, nutrition and inhibi[illegible] properties of basidiospore germination i[illegible] 1898.
—, *Serpula lacrimans* on, in U.S.S.R., 252[illegible] effect of on properties of, 2547.
—, soil fungi on, in Sweden, 3243.
—, *Stereum hirsutum* on, tolerance of t[illegible] preservatives, control, 2865b.
—, — *radiatum* and *S. sanguinolentum* o[illegible] control, 173d.
—, *Trametes serialis* and *T. variiformis* o[illegible] control, 2865b.
—, *Trichoderma* on, 1363.
—, — *viride* on, 777; reduction of conc. of N[illegible] pentachlorophenate in treated wood b[illegible] 2865a.
Tin against *Phytophthora infestans* on potat[illegible] 3176.
— compounds, organic, against *Cercospo[illegible] beticola*, 3265; *Rhizoctonia* on beet, 3265; a[illegible] pesticides, 2369f.
**Tinospora cordifolia*, *Cercospora tinosporae* o[illegible] in Pakistan, description of, 3160.
Tithonia, *Cercospora* on, in Singapore, 122[illegible] TMTD, see Thiram.
Tobacco (*Nicotiana tabacum*), *Agrobacteriu[illegible] tumefaciens* on, tumour induction by tissue[illegible] from, 1187.
—, *Alternaria longipes* on, in Central Africa[illegible] 1327; *Somalia, 2103.
*—, — *tenuis* on, in Argentina, 3199.
—, *Aspergillus flavus* on, control, 2824.
—, blackberry mosaic virus can infect, 2947d.
— broken ring spot virus on tobacco in India[illegible] 735.
—, *Cercospora nicotianae* on, *in Somalia, 1736[illegible] control, 2512.
—, cherry leaf roll virus on, transmission of b[illegible] seed, 77.
—, *Colletotrichum tabacum* on, in U.S.S.R[illegible] 3388; control, 2825.

[Tobacco], *Coronilla varia* virus on, symptoms of, 3316a.
–, *Corticium solani* on, var. reac. to strs. of, 2104.
–, *Corynebacterium fascians* on, anatomy, hosts, and morphology of, 1102.
–, cucumber mosaic virus on, 1932; in Belgium, 1724; Formosa, 3559; U.S.S.R., 733; control, 1724; effect of, on, 2509; electron microscopy of, 2203; relationship between cell nucleus and replication of virus, 3024; transmission of by vectors, 1500.
–, — — — + potato virus Y on, effect of, on, 2509.
–, — — — strs. on, transmission of by vectors, 281.
–, *Datura* malformation virus can infect, 1239.
–, effect of toxin produced by *Fomes annosus* on, 2862.
–, *Erwinia amylovora* on, effect of avirulent and virulent strs. of, on, 1657; hypersensitive reaction to, 2168.
–, *Erysiphe cichoracearum* on, in Armenia, 1735; India, 1178b; Madagascar, 2311; U.S.S.R., 1328; control, 1735, 2311; effect of method of inoculation and R.H. on conidial germination and hyphal growth of, 1100; factors affecting, 1328; incidence of, 1328; var. reac. to, 1178b, 1328.
— etch virus on *Capsicum*, 1504, 1829.
— — — on tobacco, polyphenol oxidase activity in subcellular fractions of, 2308b; protein synthesis by isolated chloroplasts of, 2308a.
–, *Fusarium oxysporum* f.sp. *nicotianae* on, association of *Meloidogyne* with, 2312a; histological aspects of, 2312b.
— growing in Germany, 2310a.
— injury, ozone + SO_2 causing, 153.
–, lucerne mosaic virus on, in Belgium, 1724; Czechoslovakia, 2766; U.S.A., 2947e.
–, — — — strs. on, transmission of by vectors, 281.
–, *Macrophomina phaseoli* on, effect of N on growth of, 2385b; utilization of C by, 2385a.
–, *Malvastrum coromandelium* yellow vein mosaic virus on, 76.
— mild green mosaic virus associated with *Verbascum thapsiforme* mosaic virus, 3533.
— mosaic virus, apparatus for concentrating suspensions of, 1326.
— — —, *Asparagus officinalis* virus (?)str. of 813.
— — —, behaviour of in agar and gelatin gels, 2102b.
— — —, biosynthesis of, 3b.
— — —, comparison of sensitivity of serological tests for, 73; of tobacco mosaic virus orchid str. particles with, 2206.
— — —, inactivation of by photosensitizing dyes, 2662.
— — —, interaction between agar and, in immunodiffusion, 570; gelatin solution and, 2102a.
— — —, mathematical model for infectivity-dilution curve of, 3370.
— — —, reconstitution of turnip yellow mosaic virus with protein subunits of, 915.
— — —, study on in plant cells, 2653; protein from defective strain of, 2595e.
— — —, tobacco mosaic virus orchid str. not serologically identical with, 2206.
— — — on apple, 2258.
[Tobacco mosaic virus] on bean, see Bean.
— — — on *Capsicum*, see *Capsicum*.
— — — on Caryophyllales and Chenopodiales, 3015.
— — — on cucumber, 914.
— — — on *Cymbidium*, 353.
— — — on *Datura stramonium*, 1325, 2663.
— — — on *Gomphrena globosa*, 2205.
— — — on *Lychnis alba*, 2665.
— — — on *Malus platycarpa*, 2258.
— — — on *Nicotiana*, 1097b.
— — — on *N. glutinosa*, see *N. glutinosa*.
— — — on pear, 2258.
— — — on plants, 2404.
— — — on Polygonales, 3015.
— — — on potato, 148.
— — — on Primulales, 3015.
— — — on tobacco in Belgium, 1724; Formosa, 3559; U.S.S.R., 733; accumulation of scopoletin in, 2946a; biochemical investigations on mutants and strs. of, 2823; control by meristem culture, 3195; diagnosis of by microelectrophoresis, 151; differentiation of plants from inclusion-bearing and inclusion-free callus cells, 2510; distribution of in leaves of, 3193; effect of actinomycin D on, 3702; DL-alanine and glutamic acid on, 1727; antibiotic on, 2971; *Pseudomonas fluorescens* on, 423; *P. syringae* on lesion formation by, 1728; of DL-serine on, 1727; temp. on hypersensitive reaction to, 1097a, b; effect of, on absorption and distribution of radio-active phosphorus in roots of, 3562; amino acid incorporation in mitochondria from leaves of, 1098; concentration of nucleic acid and protein in cell organelles of leaves of, 1726; phenol oxidase and peroxidase activity of, 2946a; electron microscopy of, 5g, 421, 736, 911; factors affecting effect of kinetin on 3194; hypersensitivity to, 1725; identification of, 74; inclusion bodies produced by strs. of, 2822; inhibition of, by adenin in leaves of, 3w; by blasticidin S, 1099; by kinetin in leaves of, 3w; interference between active and UV irradiated strs. of, 2663; movement of inclusion bodies in callus cells of, 422; multiplication of, 738; recovery of tobacco callus cell and its derivatives from, 2948f; relationship of peroxidase activity to severity of symptoms, 3703; role of chloroplasts in reproduction of, 3560; similarity in symptoms produced by actinomycin D and, 3192; susceptibility to RNA of, 737; technique for estimating quantity of virus synthesized, 2369n; isolating, 1495; temp. sensitive mutants of, 3561; unusual crystalline inclusion of, 3371; var. reac. to, 3559.
— — — on tomato, see Tomato.
— — — orchid str., on *Cassia occidentalis*, *Cattleya*, *Gomphrena globosa*, and *Nicotiana glutinosa*, comparison of with tobacco mosaic virus, 2206.
— — — — — — + *Cymbidium* mosaic virus on orchid, 2206.
— — — *Plantago* str. on *Digitalis lanata*, 2294.
— — — PM 5 str., characteristics of, 3634e.
— — — pp str. on potato and tobacco, 3540.
— — — str. on *Anchusa officinalis*, 1605.
— — — — on *Capsicum*, 217.
— — — — on *Cardaria draba*, 1605.
— — — — on *Cymbidium*, 10h.
— — — — on *Sisymbrium loeselii*, 1605.

[Tobacco mosaic virus str.] on tobacco in China, 1505.
— — — strs., hosts of, 1505.
— — — — on plants, 1505.
— — — — on tobacco, effect of systemic infections on, 420.
— — — tomato str. on *Capsicum*, 1827.
— — — — on tobacco in Japan, 154.
— — — — — on tomato, 154, 432.
— — — +cucumber mosaic virus on tomato, 1739.
— — — +potato mild mosaic virus on tomato, 1331.
— — — +potato virus X on tomato, 279, 1739, 3201.
— — — +tomato str. on tomato, 154.
— necrosis virus, comparison of sensitivity of serological tests for, 73.
— — — free from satellite virus, 2309.
— — —, transmission of by *Olpidium*, 3311l.
— — — on bean, see Bean.
— — — on cucumber, 2918.
— — — on lettuce, 1391.
— — — on potato, 4e, 3541.
— — — on tulip, *2447, 3311k.
— — —, satellite virus of, 2309; transmission of, by *Olpidium brassicae*, 2592k.
— ozone injury, nature and occurrence of, 2313.
—, *Peronospora tabacina* on, in (S.) Europe, 1734; Germany, 2310b; Hungary, 2513; Poland, 740, 1176b, 2597; Switzerland, 425; Turkey, 2519; Victoria, 3563a, b; apparatus for studying effect of R.H. on dissemination of, 2105a; appearance of new biotype of, 2513; assessment of damage caused by, 1329; association of with subsoil moisture, 2514; breeding against, 429, 2310e; conditions for oospore formation and infection by, 2826; control, 740, 1329, 1734, 2310d, 2516, 2519, 2520, 3198, 3563a; detection of aggressiveness of, 3196; distribution of, 2597; effect of, 1176b, 2310b; of conc. of spore suspension on infection, 2827; of fungicide treatments on spore dissemination of, 2105b; of moisture period on appearance of, 1732; of R.H. and temp. on conidia release by, 2518, 3564; of temp. on incubation of in controlled environment, 1731; epidemiology of, 3563a; factors affecting, 425, 1734, 1850a, 3563a; resistance to, 426, 427; severity of, 3563b; spore liberation, 739, 1900; sporulation of, 1101; genetics of resistance to, 152, 1730; geographical distribution of, 1733; incubation period for, 1850a; methods for evaluating resistance to, 428a; need for control and forecasting of, 2310c; (?) new race of, 427; occurrence of, 2310b; physiologic races of, 430; problem of immunity to, 3386; spread of, 2310b; stages in oospore formation, 3565; transmission of (?) by oospores, 2517; seed, 2516, (?)2517; var. reac. to, 425, 428b; viability of conidia of, 3197.
—, *Phytophthora nicotianae* on, 134; in U.S.A., 2521, 2946a; effect of soil moisture and soil temp. on development of, 3566; of, on peroxidase localization and isozymic alteration in, 3567; different colony types of, 2945d; factors affecting development of, 431; physiologic races of, 2521, 2945d, 2946a; possible synergism between *Penicillium* and, 3316d; var. reac. to, 431, 2521, 2946a.
[Tobacco, *Phytophthora nicotianae*] var. *parasitica* on, 218.
—, potato mop-top virus can infect, 409.
—, — virus N on, differentiation of potato virus NR symptoms from, 1313.
—, — — X on, quantitative determination of by paper electrophoresis, 571.
—, — viruses X+Y on, synergistic interaction of, 2405.
—, — virus Y on, in Belgium, 1724; New Zealand, 734; control, 1724; effect of, on 734, 2509; incidence of, 734; isolation of, 3381.
—, — — — necrotic str. on, genetics of resistance to, 1730.
—, — — — str. C on, symptomless carrier of and viability of, 408.
—, — — — str. R on, hosts, properties, and symptoms of, 3173.
—, — — — strs. on, causing tobacco vein necrosis, historical account of spread of, 2652a.
—, — — — + cucumber mosaic virus on, 2509.
—, *Pseudomonas solanacearum* on, in Colombia, 2785; Gabon, 1941; Sarawak, 2358c; var. reac. to, 2358c; virulence of, 2785.
—, — *syringae* on, hypersensitive reaction to, 2168.
—, — *tabaci* on, in U.S.S.R., 2940d.
— rattle virus, associated with TMV tomato str. on *Capsicum* in Denmark, 1827.
— — —, aster ring spot virus serologically related to, 2208.
— — —, comparative studies on two strs. of, 2407a.
— — —, electron microscopy of, 1934.
— — — in soil, 4d, 285.
— — —, *in vitro* degradation products of, 2407b.
— — —, multiplication of, 3311f.
— — — on *Capsicum*, 827, 1827.
— — — on *Gladiolus*, 285.
— — — on *Narcissus*, 1278.
— — — on potato, see Potato.
— — — on pumpkin, 1823.
— — — on *Stellaria media*, 572.
— — — on tobacco, effect of on cells of, 1507.
*— — — on tulip, 2447.
— — —, review of, 572.
— — —, symbiotic interaction between particles of, 1506.
— — —, symptoms of potato mop top virus resembling, 4c.
— — —, transmission of, by vectors, 285.
— — — Oregon str., serological relationship between pea early browning virus and, 2159a.
— — — strs. on *Gladiolus*, 2442.
—, *Rhizopus arrhizus* on, control, 2824.
—, rhubarb virus can infect, 2161l.
— ringspot virus, comparison of sensitivity of serological tests for, 73.
— — —, resemblance of *Sambucus nigra* 'Aurea' virus to, 3634d.
— — — on cowpea, 280.
— — — on *Cyamopsis psoraloides*, 3603.
*— — — on *Pelargonium*, 2748.
— — — on soybean, 1156.
— — — on tobacco in U.S.S.R., 733; factors affecting virus multiplication in callus tissue, 2946a.
— — +tomato ringspot viruses, dual transmission of by vectors, 3028.

[Tobacco], stolbur virus on, in U.S.S.R., 733; gibberellin-like substances in, 3374.
– streak virus on bean and Leguminosae, 2883.
– – – – on tobacco in U.S.S.R., 733; accumulation of scopoletin in, 2946a.
– stunt virus, transmission of by *Olpidium brassicae*, 3634f.
–, *Thielaviopsis basicola* in, in U.S.A., 2946a; effect of associated growth of bacteria from rhizosphere and non-rhizosphere soil on growth of, 1843e.
– tip chlorosis virus on tobacco in U.S.S.R., 733.
–, tomato black ring virus on, 77.
–, — spotted wilt virus on, 1854d; in Bulgaria, 1729; control, 2511.
– veinbanding mosaic virus on tobacco in Formosa, serologically unrelated to potato virus, Y, 3559.
–, *Verticillium alboatrum* on, amino acid nutrition of, 545.
–, — *dahliae* on, amino acid nutrition of, 545; interaction with, 1851a.
– virus diseases in U.S.S.R., 733; control, 1928; results of CORESTA trial on, 419.
Tolyposporium penicillariae on *Pennisetum glaucum*, 3087.
Tomato (*Lycopersicon esculentum*), actinomycetes in rhizosphere of, in U.S.S.R., 61b; effect of age of plant on, 747.
—, *Aerobacter cloacae* on, effect of field washing and post harvest chilling on, 1742.
—, *Agrobacterium tumefaciens* on, density of DNA in after infection by, 1861; effect of wound healing on tumour formation by, 3646.
—, *Alternaria* on, in France, 509, 2596.
—, — *solani* on, in Brazil, 1740; France, 234; (?) French Guiana, 2314; *Hungary, 435; control, 1740; effect of captan, daconil-2787 and maneb on, 13e; of low temp. on control of, through nocturnal illumination, 1333; symptoms of, 435; variability in, 1923; warning system for, 234.
*—, — — +*Corticium solani* on, in Hungary, symptoms of, 435.
—, — *tenuis* on, in *India, 434; Pakistan, 3204; Poland, 1332; U.S.A., 3205; control, 1334; effect of field washing and post harvest chilling on, 1742; of, on yield, 3204; penetration by, 1334; physiology of, 3204; protease activity in, 1449; var. reac. to, 3205.
—, *Ascochyta sojaecola* on, in U.S.S.R., 3600.
—, *Aspergillus* on stored seed of, factors affecting, 2551.
— aspermy virus, *Robinia* mosaic virus not related to, 1346.
— – – – on *Capsicum*, 1827.
— – – – on tomato in Finland, 1739.
—, bean virus disease on, symptoms of, 13r.
—, beet curly top virus on, spec. reac. to. 2828.
— big bud virus on papaw, 2483.
— black ring virus, *Robinia* mosaic virus not related to, 1346.
— – – – – on clover, 360.
— – – – – on *Narcissus*, 1278.
— – – – – on potato, 3541.
— – – – – on *Robinia* and *Sambucus nigra*, 77.
— – – – – on *Stellaria media*, 2406.
— – – – – on tobacco, 77.
— – – – – on tomato in Germany, hosts of, 1823; transmission of, by seed, 1498; by vectors, 1823.
[Tomato black ring virus] on vegetable marrow, 216.
— – – – on vine, 833, 1398.
— – – – – strs. on vine, 223.
— – – – – +*Arabis* mosaic virus on vine, 833.
— blossom end rot, 1941.
—, *Botrytis cinerea* on, in Poland, 1332; control, 1175j; effects of methods of deleafing on occurrence of stem lesions, 3571.
— bronze top virus on *Capsicum*, 1827.
— brown root rot in New Zealand, 1744; control, 1175k.
—, *Cercospora* on, in Gabon, 1941.
—, *Cladosporium fulvum* on, 3206; India, *434; Italy, 2583; *Botrytis yuae* associated with, 2583; identification of new races of, 2369k; selecting for resistance to, 2369k.
—, *Colletotrichum acutatum* on, characteristics of, 370.
—, — *coccodes* on, 186; in Hungary, 3207; Poland, 1332; control, 231k, 3207; morphology and physiology of, 3207; potato root eelworm associated with, 231k; symptoms of, 3207.
—, — *dematium* on, 186; in *India, 434.
—, — *phomoides* on, protease activity in, 1449.
— corky root in France, 509; Italy, 746; New Zealand, 1744; breeding against, 509; control, 1744; *Pyrenochaeta lycopersici* nov. sp. causing, *P. terrestris* distinct from, 437; symptoms of, 746.
—, *Corticium solani* on, in Egypt, 436a, b; *Hungary, 435; factors affecting pathogenicity of, 436a; effect of metabolites from, on, 436b; symptoms of, 435.
*—, — — +*Alternaria solani* on, in Hungary, symptoms of, 435.
—, *Corynebacterium* on, effect of *Bidens cernuus* preparations on, 1879.
—, — *michiganense* on, in Bulgaria, 2107; *Chile, 2526; Colombia and N.W. South America, 748; control, 748; factors affecting symptomatological differentiation of, 439; symptoms produced by virulent strs. of, 2107; technique for screening bactericides against, 11f; transmission of by seed, 2832; var. reac. to, 748.
—, *Corynespora cassiicola* on, diurnal periodicity of spore liberation in, 745; entry of, 2525.
—, cucumber green mottle mosaic virus on, inhibition of by skimmed milk, 914.
—, — mosaic virus on, in Bulgaria, 3202; Finland, 1739; France, 509; breeding against 509; control, 3202; effect of different soils on frequency of, 1739.
—, — — — tomato vein necrosis str. on, in Bulgaria, 3202.
—, — — +tobacco mosaic viruses on, in Finland, 1739; effect of different soils on frequency of, 1739.
—, damping-off of, 436a.
—, *Didymella lycopersici* on, in Finland, 917; Poland, 1332; differentiation of *Phytophthora arecae* and *P. richardiae* from, 1335.
—, *Diplodia* on, 3498.
— diseases in Netherlands, 1103; U.S.S.R., 575; breeding against, 1103; control, 575, 1738.
—, effect of culture filtrates of rhizosphere fungi on growth of, 2106; of gnotobiotic environment on growth of, 1517; of toxin produced by *Fomes annosus* on, 2862.

[Tomato], *Erwinia* on, ecology of, 11f.
—, — *carotovora* on, in U.S.A., 3572; effect of field washing and post harvest chilling on, 1742.
—, fungi in rhizosphere of, effect of age of plant on, 747.
—, *Fusarium* on, in Poland, 1332; factors affecting, 921.
—, — *culmorum* on, antagonism of actinomycetes to, 61c; fungi antagonistic to, in rhizosphere of, 61a.
—, — *oxysporum* f.sp. *lycopersici* on, in France, 509, 2596; French Guiana, 2314; Poland, 1332; accumulation of β-indoleacetic acid in, 744; acid hydrolyzable phenolics in relation to, 3568; breeding against, 509; comparison of isolates of, 1104; control, 156; effect of *Cephalosporium* on symptoms of, 3569; genetics of resistance to, 1104; immunizing effect of micromycetes on, 2830; synthesis of indoleacetic acid by, 2829; var. react. to, 743.
—, — — ff.sp. on, cross-protection in, 2210.
*—, — *roseum* on, in India, 434.
—, — — f.sp. *cerealis* on, effect of gnotobiotic environment on dry weight of, 1517.
—, — *sambucinum* on, fungi antagonistic to, in rhizosphere of, 61a.
—, *Geotrichum candidum* on, in Poland, 1332.
—, grey sterile fungus on, var. reac. to, 1175a.
— growing in U.S.A., 3209.
—, indicator for potato spindle tuber virus, 410.
—, lucerne mosaic virus on, var. reac. to, 838, 1492 l.
*—, *Malustela aeria* on, in India, 434.
—, *Mucor* on stored seed of, factors affecting, 2551.
—, mycorrhiza of, factors affecting development of, 2592s.
*—, *Myrothecium roridum* on, in India, 434.
—, N deficiency in, effect of, on mycorrhiza development, 2592s.
—, *Oidiopsis taurica* on, in Israel, correlated with irrigation, 742.
—, *Oospora lactis* f.sp. *parasitica* on, in India, 434.
—, *Penicillium* on stored seed of, factors affecting, 2551.
*—, *Phoma* on, in India, 434.
—, — *destructiva* on, control, 156.
—, *Phytophthora arecae* on, differentiation from symptoms of *Didymella lycopersici*, 1335.
—, — *capsici* on, 2831; in U.S.A., symptoms of, 2159h.
—, — *infestans* on, in Brazil, 1740; France, 234, 509, 2596; Poland, 1332; U.S.A., 3203; 3178; breeding against, 509; control, 838, 842d, 1740; effect of on chemical composition of, 80e; factors affecting, 234; forecasting of, 234; leaflet on, 3542; physiologic races of, 80d, 3178; var. react. to, 80d, 3203.
—, — *nicotianae* var. *parasitica* on, 2831; in U.S.A., symptoms of, 2159h.
—, — *richardiae* on, differentiation of from *Didymella lycopersici*, 1335; symptoms of, 1335.
—, potassium deficiency in, effect of on mycorrhiza development, 2592s; induced by ammonium nutrition, causing leaf and stem lesions, 3208.
—, potato spindle tuber virus on, 410; serology of, 2797.
—, — — — — + potato viruses X and Y on, factors affecting development of symptoms of, 410.
[Tomato, potato] virus M on, serologic detection of, 1503; transmission of mechan cally and by vectors, 1503.
—, — — X on, inhibition of by skimmed mil 278, 914.
—, — — — + tobacco mosaic virus on, eff of temp. on resistance to, 3201; of, on p ment content of leaves of, 279.
—, — witches' broom virus on, effect of hyd cortisone on transmission of, 1240.
—, *Pseudomonas* on, cultural and morpho gical characters of, 2315.
—, — on stored seed of, 2551.
—, — *solanacearum* on, 747; in Colomb 2785; French Guiana, 2314; Reunion, 11 control, 156; ecology of, 11f; effect infestation by *Meloidogyne incognita ac* and root wounding on, 157; recovery fro 1743; technique for detecting, 1862; va react. to, 1743; virulence of, 2785.
—, — *tomato* on, factors affecting symp matological differentiation of, 439.
—, *Pyrenochaeta* on, non-pathogenic to onio 155.
—, — *lycopersici* on, in France, 2596; caus corky root, 437.
—, — *terrestris* can infect, 155.
—, *Pythium* on, in French Guiana, 2314; factor affecting, 921.
—, *Rhizoctonia* on, factors affecting, 921.
—, *Rhizopus stolonifer* on, in *India, 434; eff of gnotobiotic environment on dry weight o 1517.
— ringspot virus, comparison of sensitivity o serological tests for, 73.
— — —, relationship of clover virus to, 2159e of vine yellow vein virus to, 2154.
— — —, *Sambucus nigra* 'Aurea' virus n serologically related to, 3634d.
— — + tobacco ringspot viruses, dual trans mission of by vectors, 3028.
—, *Sclerotinia sclerotiorum* on, degradation o pectic substances by, 42.
—, *Sclerotium rolfsii* on, in French Guiana 2314; control, 156, 2211.
—, *Septoria lycopersici* on, in Brazil, 1740.
— spotted wilt virus, study on in plant cells 2653.
— — — — on groundnut, 1389b.
*— — — — on lettuce, 2143.
— — — — on *Nicotiana glutinosa*, 1854d.
— — — — on *N. rustica*, 3704.
— — — — on papaw, 1854d.
— — — — on *Petunia*, 1854d, 3704.
— — — — on tobacco, 1729, 1854d, 2511.
— — — — on tomato, 1854d.
— — — — str., resemblance of *Dahlia* virus to 1609.
—, *Stemphylium botryosum* f.sp. *lycopersici* on in Israel, correlated with irrigation, 742.
—, — *solani* on, in Brazil, 1740.
—, stolbur virus on, 717; in Bulgaria, 3202 U.S.S.R., 2523; fluorescence in phloem cel walls of, 1492j; gibberellin-like substances in 3374; type of soil associated with, 1737; var react. to, 1737.
— streak in U.S.S.R., 741; caused by potat mild mosaic + tobacco mosaic virus, 1331 effect of N on, 741; type of soil associate with, 1737; var. react. to, 1737; viruse causing, 741.
—, tobacco mosaic virus on, in Finland, 1739 France, 509, 2596; Japan, 154; U.S.A.

2945e; U.S.S.R., 741; breeding against, 509; causing streak, 741; control, 1331; effect of different soils on frequency of, 1739; of EDTA on distribution of in roots, 1330; of skimmed milk on, 278, 914; of, on development of, 3200; on pigment content of leaves of, 279; factors affecting incidence and severity of internal browning, 2522; incidence of, 1331; inheritance of resistance to, 13d; modification in biological activity of, 2593b; potato virus X and other viruses associated with, 741; relationship between ectodesmata and infection of roots of, 433; symptoms of, 1331, 2945e; var. react. to, 2522.
Tomato, tobacco mosaic virus] tomato str. on, in Japan, hosts of, identical with Ainsworth's tomato streak str., but 'tomato str.' preferred as name for, 154; control by inoculation with attenuated virus, translocation of, 432.
—, — — +cucumber mosaic viruses on, in Finland, 1739; effect of different soils on frequency of, 1739.
—, — — — — +potato virus X on, effect of on pigment content of leaves of, 279.
—, — — — — +tobacco mosaic virus tomato str. on, in Japan, 154.
— *Trichoderma viride* on, effect of gnotobiotic environment on growth of, 1517.
— *Uromyces appendiculatus* on, effect of on respiration of, 1462.
—, *Verticillium* on, in France, 509; breeding against, 509; control, 525; var. react. to, 838.
—, — *alboatrum* on, 332; in France, 2596; Poland, 1332; U.S.A., 3203; analysis of responses of resistant and susceptible plants to, 1741; control, 3570; effect of *Aphelenchus avenae* on severity of infection, 2524; of growth substances on, 3570; host parasite relationships of, 438; var. react. to, 743, 3203.
—, — *dahliae* on, in Canada, 922; Israel, 1905; host-parasite relationships of, 438.
—, — *nigrescens*, *V. nubilum*, and *V. tricorpus* on, host-parasite relationships of, 438.
— virus infection in French Guiana, symptoms of, 2314.
—, *Xanthomonas vesicatoria* on, in Israel, 742; U.S.A., 1105; effect of temp. on development of, 521; factors affecting, 742; symptomatological differentiation of, 439; relationship to irrigation, 742; serological comparison with *Capsicum* isolate, 3644; var. react. to, 1105.
—, — — str. on, effect of time in culture on carbohydrate utilization by, 1183.
— yellow leaf curl virus, host range and transmission of by vectors, 286.
— — mosaic virus, 2592e.
— 'yellows' type virus on tomato in France, var. react. to, 838.
Toxoptera citricidus transmitting citrus libukin disease, 2231.
— *graminum* transmitting leaf spot virus disease of cereals, 3041.
**Trachyspermum ammi*, *Sclerotium rolfsii* on, 2794.
Tragopogon pratensis, *Cystopus tragopogonis* on, differentiation of *C. tragopogonis* on sunflower from, 1309.
Trametes gibbosa on aspen, 762.
— — on sawdust, 1766.
— *odorata* on pine stumps, 2538.
— *serialis* on timber, 2865b.
— *suaveolens* on *Salix*, 2527.
— *variiformis* on timber, 2865b.
Tranzschelia pruni-spinosae on *Anemone ranunculoides* and plum, 1662.
— — var. *discolor* on peach, 377.
— — — — — on stone fruit, *1945a, 2065.
Trapex as soil disinfectant, 1721.
Trees, *Alternaria* on, in Poland, 749.
—, ascomycetes on, in Lithuanian S.S.R., 1849e; Rumania, list of, 3573.
—, basidiomycetes on, in Rumania, list of, 3573.
—, *Botrytis* on, in Poland, 749.
— dieback in Canada, fungi associated with, 158d.
— diseases of, in Poland, 749; Tanzania, 1745f; U.S.S.R., 1746.
—, fungi imperfecti on, in Lithuanian S.S.R., 1849e; Rumania, list of, 3573.
—, deciduous, *Fomes igniarius* on, in U.S.S.R., 2527.
—, evergreen, *Phytophthora cinnamomi* on, biotypes in, 764.
—, shade, Pests and Diseases of, book on, 1338.
—,—, protection of from diseases, manual on, 2833.
Tributol in combination against *Ascochyta pisi* on pea, 477.
— — — versus organic Hg compounds, 477.
Trichloromethyl-sulphenylrhodanide fungicidal mixture against *Stemphylium sarciniforme*, 2963.
Trichloromethylthiobenzoxazolone in combination as soil disinfectant, 193b.
Trichloromethylthio compounds, antifungal properties of, 2605.
2,4,6-trichlorophenoxyacetic acid, effect of, on *Verticillium alboatrum* on tomato, 3570.
Trichocladia robiniae on *Acacia*, 1337.
**Trichoconis indica* on rice, 1575.
— *padwickii* on rice, 998, 3092, 3096.
Trichoderma viride against *Armillaria mellea*, 2838; *Polyporus hirsutus*, *Polystictus zonatus*, and *P. versicolor* on birch, 3245; *Verticillium* on lucerne, 1180e.
— —, antagonism of to *Armillaria mellea* on pine, 2120; to fungi, 3637.
— — as seed treatment for wheat, 842e; as test fungus, 1200.
— —, cellulolytic activity of, 551, 1926.
— —, degradation of malathion by, 891.
— —, effects of cultural conditions on antagonism of to *Armillaria mellea*, 3334; of, on *Erysiphe graminis* on barley, 3071; on *Fusarium oxysporum* f.sp. *lycopersici* on tomato, 2830.
— — in pine seedbed soil, 165.
— — in rhizosphere of *Acer platanoides*, 2623; bean, 2562; Leguminosae, 1180e.
— — in soil, 888, 1362, 3686.
— —, inhibition of by *Pseudomonas* in soil, 3003.
— — on celery, 892.
— — on citrus, 1001, 3440.
— — on groundnut, 204, 3287.
— — on *Hevea* rubber, 1089a.
— — on lucerne, 892.
— — on packing material, 1370.
— — on pine, 461.
— — on timber, 777, 2865a.
— — on tomato, 1517.
Trichodermin-3 against *Ophiobolus graminis* on wheat, 842e.
—, effect of, on cotton, 2737; on *Moniliopsis aderholdii* on cabbage, 1877; on *Sclerotinia sclerotiorum* on cucumber, 1877.

Trichodorus and *T. nanus* transmitting tobacco rattle virus, 285.
— *pachydermus* and *T. similis* transmitting tobacco rattle virus strs., 2442.
— *teres* and *T. viruliferus* transmitting tobacco rattle virus, 285.
Tricholoma flavovirens and *T. fulvum* on sawdust, 2334.
— *matsutake*, effect of on actinomycetes and bacteria, 1439.
— *personatum*, inhibition of root elongation in oak by, 2112.
— *rutilans* on pine stumps, 2538.
Tricholomataceae, list of, in U.S.S.R., 2110.
Trichometasphaeria turcica in air over maize field, 114.
— — in soil, 3684.
— —, inactivation of trichothecin by, 2972.
— — on maize, see Maize.
Trichomycin against *Microsphaera lonicerae* on *Lonicera tartarica*, 3335.
Trichothecin against cotton wilt, 3456; *Erysiphe cichoracearum* on tobacco, 1735; as seed treatment for cotton, 3456; as soil disinfectant, 3456.
—, inactivation of, by fungi, 2972.
Trichothecium against *Plasmopara viticola*, 1841.
— *plasmoparae*, antagonism of to *Plasmopara viticola*, 1841.
— *roseum*, antagonism of to *Plasmopara viticola*, 1841.
— —, effect of age of spores on germination of, 2195.
— —, germination of, 1484.
— — in soil, 2627.
— —, natural and induced variability of forms of, 2374.
— — on cotton, 2733.
— — on *Polystigma rubrum*, 3637.
Trifolium, see Clover.
Trifungol, see Ferbam.
2,3,5-triiodobenzoic acid, effect of on *Verticillium alboatrum* on tomato, 3570.
Triphenyl lead acetate against *Glomerella cingulata* on coffee, 1267b.
— — — versus triphenyl tin acetate, 1267b.
— tin against *Phytophthora infestans* on potato, 2939c; *Scirrhia pini* on pine, 3229.
— — acetate against *Fusicladium effusum* on pecan, 2114; *Glomerella cingulata* on coffee, 1267b; snails, 3429.
— — —, toxicity of to rice, 3429.
— — — versus triphenyl lead acetate, 1267b.
— — — in combination against *Alternaria dauci* and *Erysiphe umbelliferarum* on carrot, 493.
— — chloride against *Phytophthora infestans* on potato, 231i.
— — hydroxide against *Alternaria dauci* on carrot, 493; *Cercospora apii* on celery, 495; *Erysiphe umbelliferarum* on carrot, 493; *Fusicladium effusum* on pecan, 2114; *Septoria apiicola* on celery, 495.
Tripomol against *Coryneum foliicola* on apple, 1291.
Tripsacum dactyloides, maize dwarf mosaic virus on, in U.S.A., overwintering of, 3411.
Triscabol, see Ziram.
Trisodium orthophosphate against orchid virus diseases, 1279.
Triticum, see Wheat.
Tritisan, effect of, on growth of phytopathogenic bacteria, 2965.
Triton as spreader, 2907.
—, use of to stabilize Bordeaux mixture, 143[illegible]
— X-100, use of on *Pennisetum glaucum*, 308[illegible]
Trizone as disinfectant for conifer seed bed[illegible] 3352.
Tsuga, *Botrytis cinerea* on, in Canada, 1128.
*— *canadensis*, *Phacidiopycnis pseudotsugae* on[illegible] 2600g.
— *heterophylla*, *Fomes annosus* on, in Canada[illegible] factors affecting spore deposition of, 1129
Tuberculina maxima in Estonia, geographic distribution of, 556.
— — parasitizing *Cronartium ribicola* on pine[illegible] 1757.
— *sanguinea* in Estonia, geographic distribution of, 556.
Tulip, *Alternaria* and *Botrytis* on, control, 160[illegible]
—, *B. cinerea* on, inhibitory effect of substance in pistil on growth of, similarity of symptoms of to *B. tulipae*, 3460b.
—, — *tulipae* on, in Crete and Germany, 3460b[illegible] effect of Hg preparations on, 1624; of substance in pistil on growth of, 3460b; incidence and control of, review of, 1625.
— breaking virus on tulip, symptom expression and virus multiplication in, 2047.
—, cucumber mosaic virus on, necrosis caused by, 2369s.
—, fungal diseases of, control, description of, 359.
—, *Fusarium oxysporum* on, control, 160[illegible] effect of Hg preparations on, 1624.
—, — *redolens* on, in Scotland, symptoms of, 1282.
—, *Pythium debaryanum* on, effect of substance in pistil on growth of, 3460b.
—, *Sclerotium tuliparum* on bulbs of, effect of Hg preparations on, 1624.
—, tobacco necrosis virus on,* in the Irish Republic, 2447; identification of, 2447; factors affecting incidence of, 3311k.
*—, — rattle virus on, in Irish Republic, identification of, 2447.
—, *Typhula idahoensis* on, in U.S.S.R., sclerotial germination of, 3117.
— virus diseases and control, description of, 359.
Turf, *Corticium fuciforme* and diseases of, in the British Isles, 1631.
—, *Erysiphe graminis* on, control, 2173.
—, fungi on, factors affecting incidence of, 1629[illegible]
—, *Fusarium roseum* on, in U.S.A., 1023.
—, *Griphosphaeria nivalis*, *Ophiobolus graminis* f.sp. *avenae*, and *Sclerotinia homoeocarpa* on, in the British Isles, 1631.
Turmeric (*Curcuma longa*), *Taphrina maculans* on, in India, 401, 3161; effect of secondary infection on, 401; perpetuation of, 3531.
*Turnip (*Brassica rapa*), *Alternaria brassicicola* on, in Malaya, 512a.
— crinkle virus, plastid abnormalities in hosts of, 3591.
— — — on Chinese cabbage, 1495.
— mild yellows virus, differentiation of from other viruses, hosts of, 2592i.
— mosaic virus, rhubarb virus str. of, 21611
— — —, transmission of by vectors, 1933.
— — — on rhubarb, 3302, 3615.
— yellow mosaic virus, comparison of broad bean mottle virus with, 1936.
— — — — —, particle weight of, 1935.
— — — — —, plastid abnormalities in hosts of, 3591.

'urnip yellow mosaic virus], reconstitution of RNA of with tobacco mosaic virus protein subunits, 915.
— — — —, structure of RNA, 2595f.
— — — —, use of in diagnosis of turnip viruses, 3591.
— — — — on *Brassica chinensis*, 2654.
— — — — on cabbage, 1492t.
— — — — on Chinese cabbage, see Cabbage, Chinese.
'ussilago farfara, *Coleosporium tussilaginis* on, in Hungary, 1115.
'uzet in combination against apple russeting, 232a.
'ylenchulus semipenetrans in soil, 1000.
— —, interaction of with *Fusarium* on lemon, 1000, 2431.
— — + *Fusarium solani* in soil, 1000.
'ylophora indica mosaic virus, properties of, transmission of by vectors, 3532.
'ympanis and *T. pseudotsugae*, physiological study on, 2387.
'yphula idahoensis, inhibition of by soil-borne bacteria, 12i.
— — on tulip, 3117.
— — on wheat, 2212.
— *incarnata* on barley, 92.
— — on wheat, 2212.

UA 11 salt as timber preservative, 3249.
Ulmus, see Elm.
UV light against moulds on conifer seeds, 3224; as seed treatment for pea, 3269.
— —, effect of, on *Erysiphe graminis* on barley, 1547; *Fusarium oxysporum* f.sp. *callistephi*, 1481b; *Glomerella tucumanensis*, 729; *Leptosphaerulina briosiana* on lucerne, 366; *Phytophthora infestans*, 1461; tobacco mosaic virus, 911; *Verticillium alboatrum*, 1482.
Umbelliferae, *Alternaria* on, 242.
—, bacteria on, resemblance of some to *Erwinia carotovora*, 242.
—, celery mosaic virus can infect, 1811.
—, — western mosaic virus on, in U.S.A., 2912.
—, *Fusarium* on, 242.
—, *Protomyces macrosporus* on, taxonomy of, 3360.
—, *Xanthomonas translucens* on, 242.
Uncinula aceris on *Acer*, 917.
— *bicornis* on *Acer*, 1337.
— *necator*, effect of fungicides on conidia of, 3654.
— — on vine, see Vine.
— *salicis*, ontogeny of ascocarp of, 560.
Urea against *Venturia inaequalis* on apple, 2354d.
— alone and in combination, effect of on micro-organisms on apple, 2354b.
Uredinales in Bulgaria, 898; France, 1478; Hungary, 1915; Madagascar, book on, 3691; New Caledonia, 266; Norway, 1226; U.S.S.R., 918.
—, ecology of, 1478.
—, terminology in, 3361.
Urnula craterium, perfect state of *Strumella coryneoidea*, 3219.
Urocystis agropyri, comparison of spore structure with *Ustilaginoidea virens*, 2015.
— — on *Poa pratensis*, 28.
— — on wheat, 12t, 1513c, 2218.
— *cepulae* on onion, see Onion.
— —, spore germination in, 3290.
[*Urocystis*] *gladiolicola* on *Crocus* and *Gladiolus*, 2038.
— *occulta* and *U. vavilovii* on rye, 1513c.
Uromyces, genetics of, 558.
— *appendiculatus*, factors affecting development of, 3667.
— —, hosts of, 1462.
— — on bean, see Bean.
— — on *Phaseolus mungo*, 802.
— *betae* on beet, 2940c, 3593.
— *ciceris-arietini*, effect of *Streptomyces griseus* on, 1853.
— *dianthi* on carnation, *1242, 2172.
— *fabae*, see *U. viciae-fabae*.
— *lupinicola* on lupin, 1030, 2940b.
— *onobrychidis* on *Onobrychis viciifolia*, 3479.
— *pisi* on pea, 1028, 3268.
— — f.sp. *lathyri* on *Lathyrus* and *L. sativus*, 1028.
— — *-sativi* on pea, 1513i.
— *striatus* on lucerne, 2940b.
— *trifolii* on clover, 2946b.
— *viciae-fabae* on broad bean, see Bean, broad.
— — on lentils, 205.
— — on vetch, 2890.
Urtica dioica, beet mild yellowing virus on, 181.
Ustilaginales, classification and taxonomy of, 2633.
— in the Baltic region, 1849f; France, 1478; Hungary, 555a; Israel, 1225; Mongolia, 895; Norway, 1226; Poland, 3005; Rumania, 557.
—, ecology of, 1478.
—, Presidential Address to Indian Phytopath. Soc. on history of, 3692.
—, review of, 557.
Ustilaginoidea virens, electron microscopy of chlamydospores of, 1899, 2015.
— — in air over rice fields, 316.
— — on rice, 994, 3419.
Ustilago, effect of X-rays on chlamydospore germination of, 932.
— *avenae* on oats, see Oats.
*— *bullata* on *Festuca arundinacea*, 2942.
— *crameri*, survival of under mineral oil, 903.
— *cynodontis* in the air over grass, 2252.
— *hordei* on barley, see Barley.
— — on oats, see Oats.
— —, toxicity of aromatic and heterocyclic derivatives to, 1871a, b; of coke chemicals to, 532.
— *hypodites* and *U. longissima*, production of indolyl-3-acetic acid by, 1463.
— *maydis*, comparison of spore structure with *Ustilaginoidea virens*, 2015.
— —, electron microscopy of chlamydospores of, 3009.
— —, nitrate reductase in, 2593a.
— — on maize, see Maize.
— —, production of indolyl-3-acetic acid by, 1463.
— —, survival of under mineral oil, 903.
— *nuda* on barley, see Barley.
— — on cereals, 2209.
— — on wheat, see Wheat.
— *scitaminea* on sugarcane, see Sugarcane.
— *striiformis* on *Agrostis palustris* and *Dactylis glomerata*, 28, 2251.
— — on *Poa pratensis*, 28, 2251, 2452.
— *tritici*, see *U. nuda*.
— *violacea*, production of indolyl-3-acetic acid by, 1463.

Vaccinium, Agrobacterium tumefaciens, Botryosphaeria corticis, Crumenula urceolus, Nocardia vaccinii, Pseudomonas syringae, and *Sclerotinia vaccinii* on, in U.S.A., 1046.
— viruses (mosaic, necrotic ringspot, red ringspot, shoestring, stunt, and witches' broom) on *Vaccinium* in U.S.A., 1046.
— *angustifolium, Exobasidium vaccinii* on, control, 2600e.
— *corymbosum, Fusicoccum putrefaciens* on, in Canada, 2476.
— —, *Glomerella cingulata* on, control, 2477.
*— —, *Phyllosticta vaccinii* on, in Canada, 3384.
Valeriana officinalis, valerian ring mosaic virus on, in Germany, hosts, properties, transmission of by vectors, 3162.
Valsa cincta on peach, 2161g, 2467.
— *nivea*, nomenclature and taxonomy of, 3696.
— — on poplar, 449
— *ribesia* on current, 1663.
(?)— *sordida* causing aspen canker, 759.
— — on pine, 769.
— — on poplar, 449, 1343.
Vapam as soil disinfectant, 1352, 1721.
Vegetable marrow (*Cucurbita pepo*), *Bacillus mesentericus* on, effect of antibiotics on, 2924.
— —, cucumber mosaic virus on, conc. of, 1393.
— —, tomato black ring virus str. on, in Germany, serologically related to lettuce ringspot virus, transmission of by vectors, 216.
Vegetables, breeding of, in U.S.S.R., papers on, 80, 81.
—, diseases of, in Poland, 1176d; U.S.S.R., 574, 1771.
—, root diseases of, effect of soil microflora on 1910.
—, storage disorders of, in India, 465.
—, virus diseases of, control, 1928; in Scandinavia, list of, 568.
Venturia carpophila on apricot, peach, and plum, 2273.
— *chlorospora* on *Salix*, 440.
— *cucumerina* on cucumber, 2147.
— *inaequalis*, effect of dithiocarbamates on, 1874; tetrachlorethylene fungicides on, 2606; trichothecin on, 2972.
— — on apple, see Apple.
— — on *Malus*, 2059.
— *pirina*, inhibition of by trichothecin, 2972.
— — on pear, see Pear.
Verbascum thapsiforme mosaic virus in Czechoslovakia, associated with cabbage black ring spot virus and virus causing mild green mosaic on tobacco and *Nicotiana glutinosa*, 3533.
Verdasam against *Marasmius palmivorus* on oil palm, 2297.
Verticillium alboatrum, antagonism of soil bacteria and fungi to, 3004.
— —, asexual nuclear behaviour of, 1924.
— —, conidial respiration in, 47.
— —, effect of fungicides on growth of, 2965; of griseofulvin on, 1876; of sodium trichlorophenate on sclerotia of, 25; of substrate moisture on growth of, 546.
— —, heterokaryosis and morphogenesis in, 1482.
— — in soil, 261.
— — in U.S.S.R., hosts and distribution of, 3695b.
[*Verticillium alboatrum*], inhibition of caroteno synthesis in, 1458; of polygalacturonase o 2997.
— —, mitotic recombination in conidiophor of, 2196.
— — on *Abutilon theophrasti*, 2792.
— — on *Acer platanoides* and *A. pseudoplatan* 2317.
— — on apple, 677.
— — on apricot, 10f, 2473.
— — on *Capsicum*, 830.
— — on *Carthamus*, 3529b.
— — on cotton, see Cotton.
— — on eggplant, 830.
— — on *Hibiscus esculentus*, 2150.
— — on hop, see Hop.
— — on *Laurus nobilis*, 3576.
— — on lucerne, 2055, 3119, 3476.
— — on olive, 1058.
— — on *Parthenium argentatum*, 3554.
— — on peppermint, 2792.
— — on potato, see Potato.
— — on sorghum, 2009.
— — on soybean, 2792.
*— — on stone fruit, 1945a.
— — on strawberry, 2783, 3515.
— — on tobacco, 545.
— — on tomato, see Tomato.
— —, relationship of, to *V. dahliae*, 1851b.
— —, source of food for *Aphelenchus avena* 2524.
— —, xylem sap as medium for, 443.
— — +*Thielaviopsis basicola* on cotton, 27
— *cinerescens*, effect of on *Fusarium oxysporu* f.sp. *lycopersici* on tomato, 2830.
— — on carnation, 230i, 1175b, c, 1273.
— — on cucumber, 1175b.
— *dahliae*, antagonism of fungi in rhizosphe of *Acer platanoides* to, 2623; of plant extract to, 3336; of *Pythium* to, 60.
— —, dormancy and germination of, 1212a.
— —, effect of griseofulvin on, 1876; of, o *Fusarium oxysporum* f.sp. *lycopersici* o tomato, 2830.
— —, hosts of, 922, 3695b.
— — in Canada, 922; U.S.S.R., 3695b.
— — in rhizosphere of cotton, 633; lucern 1180e.
— — in soil, *1905, 3348.
— —, inactivation of trichothecin by, 2972.
— —, mutation of, 3695a.
— — on apricot, 1660, 2071.
— — on artichoke, 2596.
— — on cherry, 1660.
— — on cotton, see Cotton.
— — on eggplant, 502, 1825, 1905.
— — on *Equisetum arvense*, 922.
*— — on *Hedysarum coronarium*, 2747.
— — on hop, 398a.
— — on melon, 2579.
— — on peach, 1660.
— — on potato, 1078, 1905.
*— — on safflower, 9.
— — on stone fruit, 2066.
— — on strawberry, 385.
— — on tobacco, 545.
— — on tomato, 438, 922, 1905.
— — on watermelon, 2579.
— —, relationship of to *V. alboatrum*, 1851b.
— *lateritium*, decomposition of methyl cellu lose by, 551.
*— — on clover, 1180e.
— *malthousei* on mushroom, 3306.

Verticillium] *nigrescens* on tomato, 438.
— *nubilum*, dormancy and germination of, 1212a.
— — on potato, 2813.
— — on tomato, 438.
— —, structure and behaviour of nuclei of, 1212b.
— *theobromae* on banana, 2482.
— *tricorpus* on tomato, 438.
Vetch (*Vicia*), pea enation mosaic virus on, in U.S.S.R., 1142.
—, *Uromyces viciae-fabae* on, sp. react. to, 2890.
Vetiveria zizanioides, association of soil fungi with, 2184b.
Viburnum, *Phyllosticta opuli* on, in Czechoslovakia, 3355.
Vicia faba, see Bean, Broad.
— — var. *equina*, *Fusarium dimerum*, *F. oxysporum*, *F. sambucinum*, and *F. solani* on, 3282.
— *sativa*, red clover mottle virus can infect, 141.
Victorin, effects of on oats, 307, 1553, 2945c.
Vigna catjang, bean yellow mosaic virus on, in U.S.S.R., 1142.
— *marina*, *Ascochyta phaseolorum* on, in Queensland, symptoms of, 3276.
— *sinensis* × *V. sesquipedalis* virus disease in Philippines, transmission of by sap, seed, and vectors, 2h.
— *unguiculata*, see Cowpea.
Vinca rosea, *Armillaria mellea* on tissue culture of, nutrition of, 252.
— —, clover phyllody virus on, fluorescence in phloem cell walls of, 1492j.
— —, *Colletotrichum* on, in India, 2754.
— —, — *dematium* on, associated with dieback, 1283.
— —, *Gladiolus* virus can infect, 1492i.
— —, *Myrothecium roridum* on, in India, 2449.
— — yellows type disease in Egypt causing phyllody, transmission of by grafting, 2448.
Vine (*Vitis*), *Agrobacterium tumefaciens* on, conditioning of media by tissues from, 1188.
—, *Alternaria geophila* on, factors affecting, 836.
—, — *vitis* on, in U.S.S.R., 2587.
—, *Arabis* mosaic virus on, in Germany, 833; method for assessing concentration in, 1398.
—, — — — — +tomato black ring virus and + vine fanleaf virus on, in Germany, 833.
— as host plant for virus-host and vector interactions, 2352.
—, *Aspergillus* and *A. flavus* on, 1401.
—, — *niger* on, factors affecting, 836.
— asteroid mosaic disease, comparison of symptoms of with vine fanleaf virus, 3622.
—, B deficiency and toxicity in, effect of on vine virus necrosis, 2931d.
—, *Botrytis* on, resistance to, 513.
—, — *cinerea* on, 3626; in Bulgaria, 837; U.S.S.R., 1513t; control, 5m, 837, 2157, 2934, 3309, 3625, 3627; effect of sprays against, on fermentation, 505; factors affecting, 229a, 836; formation and germination of sclerotia of, 837; gall midges, mites and nematodes on sclerotia of, 229b; method for testing fungicides against, 5m.
—, Ca deficiency and toxicity in, effect of on vine virus necrosis, 2931c.
—, *Cercospora riachueli* on, in India, 2935.
—, — *rosleri* on, in U.S.S.R., 2587.
—, — *viticola* on, in India, identical with *C. vitis*, 2935.
[Vine, *Cercospora*] *vitiphylla* on, in U.S.S.R., 2587.
—, — *vitis* on, *C. viticola* on vine in India identical with, *Mycosphaerella personata* perfect state of, 2935.
—, *Cladosporium* on, factors affecting, 836.
—, copper deficiency and toxicity in, effect of on vine virus necrosis, 2931d.
— corky bark virus on vine, symptoms of, 1399.
—, *Cryptosporella viticola* on, control, 2936.
—, *Cytospora vitis* on, in U.S.S.R., 2587.
— diseases in Argentina, 2598; control, 2933; tables of fungicides against, 2171.
— ' dying arm ' in S. Australia, not due to vine fanleaf virus, 3307.
—, *Elsinoe ampelina* on, in U.S.S.R., 1513t; resistance to, 513.
— enation disease, transmission of by grafting, 1838; (?)vine fanleaf virus related to, 1839.
—, *Exosporium sultanae* on, in Iran, 2586.
— fanleaf virus on *Chenopodium amaranticolor*, 1854h.
— — — on vine, 1835; in France, 2153; Germany, 833; Iran, 2586; Italy, 3621; Venezuela, 1854h; comparison of vine asteroid mosaic symptoms with, 3622; diagnosis of, 3623b; (?)relationship of to vine enation disease syndrome, 1839; symptoms of, 1854h; technique for detecting, 2152; transmission of, by vectors, 2932, 3621; to herbaceous plants, 3624.
— — — +*Arabis* mosaic virus on vine, 833.
—, *Fomes igniarius* on, in Iran, 2586.
— golden flavescence virus on vine in Germany, similarity of to latent golden flavescence in France, 225; inhibition of by heat, 1492f.
—, *Hendersonula toruloidea* on, in Iraq, infection by and spread of, 2590.
— infectious degeneration virus on vine in Argentina, 834; France, 1492g; Italy, 3620; Germany, 833; control, 224a; electrophoretic investigations on, 1837; factors affecting, 224a; method for assessing conc. in, 1398; physiological abnormalities in, causing fan leaf and leaf roll, 224b, c; technique for purifying, 1492r; transmission of by vectors, 224a; vine mosaic virus distinct from, 1492g; vine yellow mosaic virus associated with, 834; viruses associated with, 833.
— — malformation, transmission of by grafting, 1838.
—, insect damage to, similarity of to virus diseases and nutritional deficiencies, 2591.
—, iron deficiency and toxicity in, effect of, on vine virus necrosis, 2931d.
— latent golden flavescence in France, similarity of to vine golden flavescence in Germany, 225.
— leaf and vein banding in Calif. related to vine yellow mosaic in Victoria, 10g.
— — roll virus on vine in Italy, 3620, 3623a; effects of, anatomical, 504; on yield, 3623a; incidence of, 3623a; symptoms of, distinguished from K deficiency, 504, 2931b; trabeculae in, 2353; var. react. to, 2153.
—, list of world-wide virus-indexed propagating material, 1493.
—, Mg deficiency and toxicity in, effect of on vine virus necrosis, 2931c.
—, Mo deficiency in, effect of on vine virus necrosis, 2931d.
— mosaic virus on vine in France, distinct from infectious degeneration virus, non-transmission of mechanically, 1492g.

[Vine], N deficiency and toxicity in, effect of on vine virus necrosis, 2931a.
— panachure virus, similarity of vine yellow mosaic virus to, 834.
—, *Phoma flaccida* on, control, 2936.
—, phosphorus deficiency in, effect of on vine virus necrosis, 2931b.
—, *Phylloxera* on, effect of on vector of infectious degeneration virus, 224a.
—, *Phytophthora cinnamomi* on, in New S. Wales, 2357j.
—, *Plasmopara viticola* on, in Czechoslovakia, 2937; U.S.S.R., 1513t; antagonism of *Trichothecium plasmoparae* and *T. roseum* to, 1841; control, 226, 835, 2155, 2156, 2588, 2589; effect of fungicides on physiology of, 2156; of grafting on resistance to, 1840; of phelam DP on, 2172; of sprays against, on fermentation, 505; estimation of 'blocking' power of fungicides on, 1400a, b; factors affecting, 226; forecasting of outbreaks of, 1488, 2937; genetics of, 227; var. react. to, 513.
—, potassium deficiency and toxicity in, effect of on vine virus necrosis, 2931b.
—, production of healthy propagating material of, 2585.
—, *Pseudopeziza tracheiphila* on, in Hungary, ascospores causing infection by, 2158; U.S.S.R., 1513t.
—, *Rhacodiella vitis* on, in U.S.S.R., 1513t; persistence of infection by, 3308; saprophytic multiplication of, 507.
—, *Rhizopus stolonifer* on, factors affecting, 836.
—, *Sclerotinia fuckeliana* on, control, 2155.
— soil-borne virus diseases in Italy, transmission of by vectors, 3621.
—, *Stereum hirsutum* on, in Iran, 2586.
— stunting disease in S. Australia, 3307.
—, sulphur deficiency in, effect of on vine virus necrosis, 2931c.
—, tomato black ring virus on, in Germany, 833; method for assessing concentration in, 1398.
—, — — — — — + *Arabis* mosaic virus on, in Germany, 833.
—, — — — — — strs. on, inoculation of, 223.
— 'tsilik marasi' disease in Greece, *Cephalosporium* and *Xanthomonas* associated with, 3628.
—, *Uncinula necator* on, in Iran, 2586; U.S.S.R., 506, 2587; control, 228, 2155; factors affecting, 5m.
— vein banding virus on vine in Hungary, 1835; Iran, 2586; transmission of, by vectors, 2932.
— virus diseases in Hungary, 1835; Iran, 2586; S. Australia, 3307; U.S.S.R., 503; conference on, 2352; electron microscopy of, 503; investigation and identification of, 3619; production of healthy propagating material, 2585; study on, 503; technique for detecting, 2152.
— — necrosis, effect of mineral deficiencies and toxicities on, 2931a.
— witches' broom virus on vine, method for assessing concentration in, 1398.
— yellow mosaic virus on vine in Hungary, 1835; Italy, 3621; Victoria, 10g; electrophoretic investigations on, 1837; N metabolism of, 1836; related to vine leaf and vein banding in Calif., 10g; serology of, 834; similarity of to vine panachure virus, 834; transmission of by vectors, 3621.
[Vine yellow mosaic virus] str. on vine, in S Australia, incidence of, 3307.
— — vein virus on vine, serological relationship of to tomato ringspot virus, 2154.
Viola tricolor var. *hortensis*, inhibition of tobacco mosaic virus by anthocyanins from 1938.
Virology, Techniques in experimental, book on 909.
Viruses, assay of infectivity of, 909; characterization of, 908; classification of, 71, 23 2592e, 2651a, e, 3701; conference on, 90 control, 1235, 1236, 2201, 3018; delay detection of, 1175h; Design and function the threshold of life, book on, 1234; Disease of agricultural crops and their control, boo on, 3017; economic importance of, 30 effect of on plant cell, 569; electron micr scopy of, 1231e; epidemiology of aphi transmitted, 2656; evaluation of VA system for, 2592e; general principles taxonomy of, 2651d; host ranges of, 30 3369; infective nucleic acids of, 909; inte action of, with host cells, 1842a, b; 'univalent' fragments of antibodies a 2592c; Kolmer's method for quantitat determination of, 3021; mechanism infection by, 908; nature of, 2651c; nome clature of, 1494, 2651f; penetration of, 9 plant reactions evoked by, 908; purificati of, 908; reactions and taxonomy of, 30 role of nucleic acids of, 1929; serologic detection of, 1930, 3020; synthesis of prote and nucleic acid by, 908; technique f separating from mixtures, 1497; tra location of, 908, 3019; transmission o 2592j; by seed, 1498; vectors, 1236, 2356.
Vitex keniensis, *Phoma viticis* on, in Keny 3223; control, 163.
— —, *Phyllosticta ragatensis* on, in Keny 3223; factors affecting, 163.
Vitigran against *Plasmopara viticola*, 835.
— blue against *Alternaria porri* on onion, 20
Vitis, see Vine.
Vorlex as soil disinfectant, 156, 1825.

Walnut (*Juglans*), *Armillaria* on, effect grafting on resistance to, 1114.
—, *Erwinia nigrifluens* and *E. rubrifaciens* o in U.S.A., 2845.
—, *Gnomonia leptostyla* and *Microstrom juglandis* on, in U.S.S.R., 1337.
*—, *Phyllosticta juglandis* on, in Czech slovakia, 3355.
—, *Phytophthora cinnamomi* on, effect grafting on resistance to, 1114.
—, *Polyporus hispidus* on, in U.S.S.R., bi logical and morphological features of, 358
Watermelon (*Citrullus vulgaris*), *Colletotrichu lagenarium* on, effect of radiation on, 2576.
—, cucurbit latent virus on, in U.S.A., associa tion of watermelon mosaic virus 2 wit 2159j.
—, *Fusarium* on, in Brazil, 2578; control, 214
—, — *oxysporum* on, in U.S.S.R., 1513 2579.
—, — — f.sp. *niveum* on, pathological change in, and role of seed in spread of, 81.
—, — — ff.sp. on, cross-protection in, 2210.
—, *Geotrichum candidum* on, 876.
—, *Glomerella cingulata* var. *orbiculare* o sexual expression in, 824.

[Watermelon] mosaic virus on cucumber and pumpkin, 1394.
— — — on squash, 1393.
— — — on watermelon in Cuba, 818; conc. of, 1393; distribution of in S.E. Europe, 1394; transmission of by vectors, 818.
— — — 2 on *Chenopodium amaranticolor* and Cucurbitaceae, 2159j.
— — — — — on watermelon in U.S.A., association of cucurbit latent virus with, 2159j.
—, muskmelon necrotic spot virus on, in Japan, 213.
—, *Mycosphaerella melonis* on, 826.
—, papaw mosaic virus on, transmission of by vectors, 832.
—, *Verticillium dahliae* on, in U.S.S.R., 2579.
Vepsyn, effect of on *Erysiphe graminis* on barley, 303.
Wheat (*Triticum*), *Agropyron* mosaic virus on, differentiation of, from *Hordeum* mosaic virus, 289; from wheat streak mosaic virus, 12u, 289.
—, *Alternaria* on, in W. Australia, 952.
—, — *tenuis* on, in India, 1973.
—, — *tenuissima* on, in India, symptoms of, 951.
—, *Aspergillus* on grain of, biochemical features and classification of, 3065.
—, — *glaucus* on, survival of on seed in soil, 591.
—, — *halophilicus* and *A. restrictus* on, invasion by, 1974.
—, aster yellows virus on, 1953; strs. of, transmission of by vectors, 2678.
—, barley yellow dwarf virus on, in Canada, 1523; effect of on quality and yield, 3394; factors affecting, 1957.
— ' bright yellow mosaic stripe ' in U.S.S.R., transmission of by (?)*Delphacodes pellucida*, (?)virus nature of, 3044.
—, *Bromus* mosaic virus on, in S. Africa, 288.
—, Ca deficiency in, ' crestamento ' associated with, 1970.
—, *Calonectria nivalis* on, effect of temp. on germination capacity of seeds of, 3062.
—, *Cercosporella herpotrichoides* on, in Germany, 1844; Irish Republic, 508b; Rumania, *590; U.S.S.R., *580, 1513b; control, 5h, 926, 1542; effect of diuron on incidence and severity of, 928; of green manure on, 2667; of ploughing depth on incidence of, 1255, 3060; of sowing dates on incidence of, 1255; of, on yield, 926, 1542; factors affecting, 1255; first stages of infection by, 1955; genetics of, 2692; incidence of, 1844; review of, 101; var. react. to, 1972; virulence of, 287; weed grasses as reservoirs for, 508b.
—, *Claviceps purpurea* on, in U.S.S.R., 1513g.
—, clover phyllody virus on, in Rumania, 3375.
—, *Cochliobolus sativus* on, 595; in India, 1973; Philippines, 2693; Queensland, 1252; U.S.S.R., 589, 1513b, 3058; Western Australia, 952; control, 1513b, 2693; effect of microelements on infection by, 3058; of sowing time on, 589; etiology of, 2693; factors affecting, 1513b; genetics of resistance to, 2161d; hosts of, 2693; incidence of, 1252; morphology of, 2693; review of, 101; role of, in seedling disease complex, 3063; symptoms of, 2693; var. react. to, 1973, 3059.
—, *Corticium solani* on, effect of diuron on incidence and severity of, 928; of, on, 297; incidence of, 297.
[Wheat] ' crestamento ' in Brazil, correlation of with Ca deficiency, 1970.
—, cytokinin activity in, 538.
—, *Dactylis glomerata* mottle virus on, 1628.
—, differential resistance of cell walls of to enzymes from *Colletotrichum lindemuthianum*, 2988.
—, *Dilophospora alopecuri* on, in Yugoslavia, 93.
— diseases, trials of resistant vars. in Argentina, 1954; var. react. to, 2160m.
— dwarf virus on barley, 955.
—, *Erysiphe graminis* on, 1245; in U.S.S.R., 936, 1513e; Yugoslavia, 93; effect of on changes in pH, 930; genetics of, 929; strains of, 1253; var. react. to, 93, 930, 936, 1253, 2692.
— foot rot, host-pathogen interaction in, 3k.
—, fungi on, in Finland, 3314; incidence of on stored, 1975.
—, *Fusarium* on, in W. Australia, 952; Yugoslavia, 93; control, 2416; genetics of resistance to, 2161d; review of, 101; var. react. to, 93.
—, — *avenaceum* on, in Great Britain, 1539; U.S.S.R., 589; effect of sowing time on, 589; factors affecting, 1539, 3404; incidence of, 3404.
—, — *culmorum* on, in Great Britain, 1539; U.S.S.R., 1513b; effect of on yield, 1513b; factors affecting, 1539, 3404; incidence of, 3404.
—, — *gibbosum* on, in U.S.S.R., 1513b.
—, — *poae* on, incidence of, 3404.
—, — *roseum* on, role of in seedling disease complex, 3063.
—, *Gibberella avenacea* on, in U.S.A., description of, perfect state of *Fusarium roseum* f.sp. *cerealis* ' Avenaceum ', 3405.
—, — *zeae* on, in Brazil, 1970; Japan, 1541; U.S.S.R., 589; control, 90; effect of sowing time on, 589; factors affecting, 1541; forecasting outbreaks of, 1541; genetics of, 1540; method for inoculating, 3406a, b; var. react. to, 1970.
—, *Griphosphaeria nivalis* on, in Great Britain, 1539; N. America, 298; control, 89; var. react. to, 2212.
—, *Hordeum* mosaic virus on, differentiation of, from *Agropyron* mosaic and wheat streak mosaic viruses, hosts of, 289.
—, inhibition of root growth of by metabolite from *Cochliobolus heterostrophus*, 3083.
— leaf chlorotic spot in Yugoslavia, var. react. to, 93.
— — spot virus disease in Bulgaria, incidence, transmission of by vectors, 3041.
—, *Leptosphaeria nodorum* on, in Austria, 1254; Brazil, 1970; Great Britain, 1539; W. Australia, 952; control, 89; factors affecting, 1254; heritable resistance to, 949; method for detecting, 1e; var. react. to, 1539, 1970.
—, maize rough dwarf virus on, 1524a; electron microscopy of, 2654.
—, Mn toxicity in, in Greece, 1911.
— mosaic virus, non-transmission of by *Olpidium*, transmission of by *Polymyxa graminis* and soil, 662.
— mottle virus on wheat, detection of in mites, 2161b.
—, mycopericarp communities of, monograph on, 299.
— mycorrhiza, 1843b.

[Wheat], *Ophiobolus graminis* in rhizosphere of, antagonism of fungi to, 3061.
—, — — on, 2592l, 3043; in Finland, 917; U.S.S.R., 589, 1513b; Yugoslavia, 93; control, 842e; development of, 296; effect of antagonistic actinomycetes on, 1256a; of green manure on, 1256b, 2667; of ploughing depth and sowing date on incidence of, 589, 1255, 3060; of soil microflora on infectivity of, 1219; of *Trichoderma viride* on, 842e; of, on yield, 2421; fructification of, 950; review of, 101; technique to obtain perithecia of in culture, 1971; var. react. to, 93, 1972.
— pale green dwarf virus on wheat in U.S.S.R., transmission of by vectors, 3044.
—, *Penicillium* on grain of, biochemical features and classification of, 3065.
—, — *chrysogenum*, *P. citrinum*, and *P. expansum* on, survival of on seed in soil, 591.
—, — *psittacium*, *P. raistrickii*, and *P. rugulosum* on grain of, biochemical features and classification of, 3065.
—, physiologic leaf spot, genetics of, 1976.
—, *Pithomyces chartarum* on, in W. Australia, 952.
—, *Pleospora vulgaris* on, in U.S.S.R., effect of sowing time on, 589.
—, *Podosporiella verticillata* on, in W. Australia, 952.
—, *Polymyxa graminis* in roots of, 2592o.
—, *Puccinia* on, 1245; control, 1878.
—, — *graminis* on, 88c; in Austria, 292; Canada, 2677; Egypt, 292; Germany, 292, 1960; Greece, 1531; Hungary, 292; India, 1533; Irish Republic, 508a; Israel, 1532; Italy, 292; Libya, 95; Nigeria, 1404a; Pakistan, 1535; Poland, 1176i; Rumania, 582, 1958, 2681a, b; Switzerland and Sudan, 292; U.S.A., 3048; U.S.S.R., 936, 1513d; Western Australia, 293; Yugoslavia, 93; analytical study on, 94b; behaviour of, 583; control, 2682, 3046; culturing of, 1534; cytoplasmic carotenes of races of, 3398; development of uredospore echinulation of, 2414; distribution of, 3631; of radio-active cytidine, leucine, and uridine in leaves of, 3047; effect of chloramphenicol on infection by, 940; of inorganic salts on, 3049; of maleic hydrazide on, 937, 1543; of on carbohydrate dissimilation and hexokinase activity in leaves of, 585, 3050; on incorporation and uptake of P^{32} by, 939; on leaf contents, 584; on leaf proteins, 1248; on phloem transport, 872; on weight, 3046; endogenous respiration of uredospores of, 3397; enzyme and protein patterns from uredospores of, 1963; evaluation of spore deposition in epidemics of, 1530; factors affecting severity of, 1958; genetics of resistance to, 586, 1962, 2413; germination of uredospores of at low spore densities, 290; haustoria of, host endoplasmic reticulum related to, 12o; fine structure of, 3051; histochemical study on, 94a; overwintering of, 1531; pathogenic potential of, assay of, 942; physiologic races of, 95, 292, 508a, 587, 1531, 1532, 1533, 1960, 2681a, b; race and var. specificity of teleutospore formation in, 3052; relationship between hypersensitive tissue and resistance to, 291; resistance to, 3q, 582; strains of, 293; technique for inoculating, 1529, 1959; time of appearance of, in relation to epidemics, 3048; uredospores of, binding of dyes by polar regions of, 941; var. reaction to, 93, 582, 586, 936, 938, 1533, 2413, 2681b, 2692, 3046.
[Wheat, *Puccinia*] *recondita* on, 1404a; in Brazil, 1970; Canada, 2677; Rumania, 582, 1958, 2681a, b; U.S.S.R., 936, 1513d; W. Australia, 293; Yugoslavia, 93; breeding against, 2160; control, 945, 2416, 2682, 2683, 3046; determination of resistance to, 1965; effect of chloro (2-chloroethyl) trimethyl-ammonium chloride on sporulation of, 944b; of light and temp. on protein content and cell wall weight of uredospores of, 2415; on uredospore production of, 2684; of maleic hydrazide on resistance to, 1543; of preceding crops on resistance to, 2209; of, on accumulation and distribution of leaf contents of, 584; on amino acid and sugar metabolism, 1250; on RNA composition of, 3053; on weight, 3046; evaluation of spore deposition in epidemics of, 1530; factors affecting, 1958, 3399; field collections of, methods of analysing, 294; genetics of, 944a, 1248, 3400; inhibition of by light, 2685; international register of physiologic races of, 7th revision of, 943; physiologic races of, 95, 2681a, 2684; resistance to, 582; strains of, 293; systemic fungicides against, method for testing, 1870; teliospore formation by, 3399; var. react. to, 93, 582, 936, 1970, 2681b, 3046, 3399.
—, — *striiformis* on, in Chile, 946; Czechoslovakia, 3056; England, 2160a; Rumania, 582, 1958, 2681b; Switzerland, 96; U.K., 2686; U.S.A., 2417; U.S.S.R., 936, 1513c, 2687; absence of, in Iberian Peninsula, 3401; comparison of with *P. striiformis* f.sp. *poae* on *Poa pratensis*, 2451; control, 948, 3046; distribution of races of, 11b; effect of light on var. react. to, 3067; of mechanical defoliation and, on, 3055; of, on accumulation and distribution of leaf contents, 584; on weight, 3046; factors affecting, 1958, 2687; forecasting outbreaks of, 96; geographical distribution of, 2160h, 3401; germination of uredospores of, at low spore densities, 290; heterokaryosis in, 1535; hosts of, 2417; incidence of, 946, 2687; increase in U.K., 2686; inoculation of, 96; isolates of, 2160h; method for testing for resistance in, 3056; new races of, 2160a; oversummering of, 2417; overwintering of, 2687; physiologic races of, 1535; new characteristics of, 3402; identity and origin of, 947; resistance to, 582; revision of leaflet on, 3054; testing for resistance to, 5c; var. react. to, 582, 936, 947, 2160a, 2681b, 2687, 2692, 3046, 3055, 3402.
—, *Pyrenophora tritici-repentis* on, in Austria *7; distribution of, 3631.
—, *Pythium* on, 861.
— root rot, effect of phytotoxins from crop residues on, 2626.
—, *Sclerotium rolfsii* on, effect of panogen on, 3063; medium for producing basidia on, 2966; role of in seedling disease complex, 3063.
*—, *Selenophoma donacis* on, in Canada, 3384.
—, *Septoria tritici* on, in Brazil, 1970; Yugoslavia, 93; distribution of, 3631; effect of C and N on, 3064; var. react. to, 93, 1970.

Wheat] streak mosaic virus on oats, 289.
— — — — on wheat in Canada, 1956; U.S.A., 924; U.S.S.R., 1247, *2679; control, 1247; detection of in mites, 2161b; differentiation of *Agropyron* mosaic virus from, 12u, 289; of *Hordeum* mosaic virus from, 289; effect of, on, 2679; epidemiology of, 924; evaluation of losses in, 1956; localization of in *Aceria tulipae*, 3396; particles of, 1525; symptoms of, 2679; transmission of, by sap, 2679; by vectors, 924, 1231a, 1247, 1525.
— striate mosaic virus on maize, 1559.
— — — — on wheat in U.S.S.R., 923, 3044; review of, 3045; symptoms of, 923; transmission of by vectors, 3044, 3045.
— — — —, European str., transmission of by vectors, 1526.
—, *Tilletia* on, genetics of, 2418.
—, — *caries* on, in Germany, 97; Poland, 1176c; Sweden, 1968; U.S.S.R., 933, 1513c, 2688; control, 89, 578, 933, 934, 1176c, 2594g, 2600b, 2688, 2689, 3403; effect of cycocel on, 2600b; factors affecting, 933, 1966; fungicide suspension against, preparation of, 934; genetics of, 935; new race of, 2215; physiologic races of, 97; problem of immunity, 3386; role of infection load in changes of resistance to, 98; spec. react. to, 97; var. react. to, 97, 1966, 2215.
—, — — +*T. foetida* on, control, 3403.
—, — *contraversa* on, in France, 1536; Germany, 5b, 97; *Sweden, 1968; U.S.S.R., 1513c; control, 5b; factors affecting incidence of, 2690; indoleacetic acid oxidase in, 3i; physiologic races of, 97; revised classification of races of, 2216; spec. react. to, 97; survival of spores of in soil, 1251; symptoms of, 1968; var. react. to, 5b, 97.
—, — *foetida* on, in Argentina, 1537; India, 3057; U.S.S.R., 933, 1513c; control, 578, 933, 3403; effect of depth and time of sowing on incidence of, 3057; factors affecting, 933, 2419; genetics of resistance to, 1537; var. react. to, 1537.
—, — — +*T. caries* on, control, 3403.
—, — *nanifica* on, factors affecting infection of, 3407.
—, — *pancicii* on, factors affecting infection of, 3407.
—, *Typhula idahoensis* on, var. react. to, 2212.
—, — *incarnata* on, in Germany, 92; var. react. to, 2212.
—, uptake and metabolism of 2-thio-6-azauracil, 2-methylthio-6-azauracil, and glyoxylic acid thiosemicarbazone by roots of, 3331.
—, *Urocystis agropyri* on, in U.S.S.R., 1513c; genetics of, 2218; symptoms of, 12t.
—, *Uromyces appendiculatus* on, effect of on respiration of, 1462.
—, *Ustilago nuda* on, in Poland, 1176c; Turkey, 2691; U.S.S.R., 1513c, 1969; Yugoslavia, 93; comparison of spore structure with *Ustilaginoidea virens*, 2015; control, 931, 1176c, 1538; distribution of, 2691; factors affecting, 931; genetics of, 100; identification of races of, 1969; new physiologic race of, 99; races of, 1538; results of testing for resistance to, 295; review of, 931; var. react. to, 93, 931, 1538.
—, *Xanthomonas translucens* var. *undulosum* on, in U.S.S.R., 2940a.
— yellow mosaic virus, effect of enzyme inhibitors on infectivity of, 2661.
— × *Agropyron* mycorrhiza, factors affecting, 38.
Wild cucumber (*Echinocystis lobata*) mosaic virus, similarity of muskmelon necrotic spot virus to, 213.
WN12 as soil disinfectant, 1721.
Woodpulp, fungi on, decomposition by in storage, 3590c; physiology of, 3590a.
—, micro-organisms in, interaction between, 3590b.
Woollen textiles, *Ctenomyces* on, control, 3658.
— —, microbial degradation of in the Tropics, 3657.
— —, soil micro-organisms on, control, 3658.
W.P. D735 against *Ustilago nuda* on barley, 104.
— in combination against *Corticium solani* on pine, 773; *Ustilago nuda* on barley, 104; as soil disinfectant, 773.

Xanthium strumarium powdery mildew, *Oidium xanthami* proposed as name for, 2193.
Xanthomonas albilineans on sugarcane, see Sugarcane.
— —, retention of in genus, 2365a.
— *annamalaiensis* on *Pennisetum typhoides*, 3632e.
— — synonymous with *Erwinia herbicola*, 2365a.
— *axonopodis* on grasses, 666.
— *balsamivorum* synonymous with *Erwinia herbicola*, 2365a.
— *campestris*, cellulolytic and pectolytic enzymes in, 3643.
— —, inhibition of, by streptocycline, 1197.
— —, relationship between *X. vesicatoria* and, 1182.
— *carotae* on coriander, 1677.
— *citri* on citrus, 919, 2022.
— —, utilization of inorganic S by, 2603.
— *cosmosicola*, synonymous with *Erwinia herbicola*, 2365a.
— *cyamopsidis* on *Cyamopsis psoraloides*, 2140.
— *cynodontis* on *Cynodon dactylon*, 2760.
— *eleusineae* on *Eleusine coracana* in India, 3632e.
— *esculenti*, synonymous with *Erwinia herbicola*, 2365a.
— *fragariae*, retention of in genus, 2365a.
— *gorlencovianum* on tea, 1723.
*— *hederae* on ivy, 3464.
— *hyacinthi* on hyacinth, 2369.
— *indica* on *Setaria italica*, 3632e.
— —, synonymous with *Erwinia herbicola*, 2365a.
— *juglandis*, C.M.I. description of, 2960.
— *mali* associated with canker of *Malus*, 2041.
— *malvacearum*, antagonism of *Pythium* to, 60.
— —, effect of DCTFA on, 3653.
— — on cotton, see Cotton.
— —, utilization of inorganic S by, 2603.
*— *maydis* on maize, 1863.
— —, synonymous with *Erwinia herbicola*, 2365a.
— *musicola* in soil, 3645.
— *oryzae* on rice, see Rice.
— *oryzicola* on rice, 994.
— *pelargonii* on *Pelargonium*, 1622.
— *penniseti*, synonymous with *Erwinia herbicola*, 2365a.
— *phaseoli* on bean, 192, 2137, 2566.
— —, technique for detecting, 1181.
— —, utilization of inorganic S by, 2603.
— — var. *fuscans* on bean, 192, 796.
— — — *sojense* on soybean, 487, 2899.

[*Xanthomonas*] *physalidicola* and *X. physalidis*, resemblance of *X. vesicatoria* str. on *Physalis* and *P. peruviana* to, 2484.
— *proteamaculans*, classification of as *Erwinia proteamaculans*, 2365a.
— *pruni*, biological and morphological studies on bacteriophages of, 853.
— —, utilization of inorganic S by, 2603.
— *rubrisorghi* on sorghum, 1262, 3632e.
— —, synonymous with *Erwinia herbicola*, 2365a.
— *sesami* on sesame, 1679.
— *tagetis*, synonymous with *Erwinia herbicola*, 2365a.
— *translucens* on coriander, 1677.
— — on Umbelliferae, 242.
— — var. *undulosum* on wheat, 2940a.
— *vasculorum* on sugarcane, 3188a, b.
— *vesicatoria* on *Capsicum*, see *Capsicum*.
— — on tomato, see Tomato.
— —, relationship between *X. campestris* and, 1182.
— —, utilization of inorganic S by, 2603.
— — str. on *Physalis peruviana*, 2484.
— — — on tomato, 1183.
Xiphinema americanum transmitting peach rosette mosaic virus, 3136; tobacco + tomato ringspot viruses, 3028.
— *diversicaudatum* transmitting *Arabis* mosaic virus, 1499, 2592j, 3144.
— *index* transmitting *Arabis* mosaic virus, 2932; vine fanleaf virus, 2932, 3621; vine infectious degeneration virus, 224a; vine veinbanding virus, 2932; vine yellow mosaic virus, 3621.
X-ray diffraction study of broad bean mosaic virus, 3379.
X-rays, effect of, on chlamydospore germination of *Tilletia* and *Ustilago*, 932; on formation of tumours by *Agrobacterium tumefaciens* on *Helianthus tuberosus*, 1860; on tobacco mosaic virus, 911.
Xylamon as timber preservative, 3249.
Xylem sap as medium for *Ceratocystis fagacearum*, *C. ulmi*, *Fusarium oxysporum* f.sp. *perniciosum*, and *Verticillium alboatrum*, 443.

Yam (*Dioscorea* spp.), *Colletotrichum gloeosporioides* f.sp. *alatae* on, taxonomy of, 3617.
Yeasts, genetics of, 239b.
—, the life of, monograph on, 2956.
—, sensitivity of to actidione, 533.
Youcai mosaic virus on *Brassica campestris*, 1505.
Yucca aloifolia, *Coniothyrium concentricum* on, *C. henriquesii* synonymous with, *Leptosphaeria obtusispora* perfect state of, 2048.

Zea mays, see Maize.
**Zephyranthes grandiflora*, *Stagonospora curtisii* on, in England, 658.
Zerlate against *Curvularia inaequalis* on maize, 2003; *Ophiobolus graminis* f.sp. *avenae* on *Agrostis tenuis*, 1632.
Zinc against *Pseudoperonospora humuli* on hops, 3524.
— deficiency in avocado pear, 3149.
—, effect of, on antagonists to *Verticillium dahliae* on cotton, 633; on incidence of *Streptomyces scabies* on potato, 2503; on resistance of cucumber to *Erysiphe cichoracearum*, 2145.
[Zinc] in combination against *Pseudoperonospora humuli* on hops, 3524.
— acid sulphate as seed treatment for beet, 2556.
— dithiocarbamates against *Alternaria senecionis* on *Senecio cruentus*, 2244.
— omadine as seed treatment for beet, 1[illegible]
— oxide in combination, constituent of perezin, 1720.
— sulphate as seed treatment for cotton, 203[illegible] for wheat, 2416, 3058; as stabilizer for Bordeaux mixture, 1433.
— —, effect of on hop crinkle disease virus, 3154.
— thiocarbamate against *Cercospora coffeicola* on coffee, 3442.
Zineb, adaptation of *Venturia inaequalis* to, 2461.
— against *Alternaria chrysanthemi*, 34[illegible] *A. longipes* on tobacco, 1327; *A. solani* on potato, 2809; *Ascochyta cucumis* 573[illegible] *Botrytis cinerea* on tomato, 1175j; *Bremia lactucae* 3297; *Colletotrichum coccodes* on *Capsicum* and tomato, 3207; *C. phomoides* on *Capsicum*, 1831; *Elsinoe veneta* on raspberry, 573a; *Exobasidium vaccinii* on *Rhododendron*, 660; *Fabraea maculata* on pear, 2271; *Glomerella cingulata* on mango 394; *Guignardia citricarpa*, 2725; *Itersonilia perplexans* on *Chrysanthemum*, 1016; *Kabatiella caulivora* on clover, 668; *Marssonina* on poplar, 451; *Ovulinia azaleae* on *Rhododendron*, 660; *Peronospora tabacina*, 740, 132[illegible] 1734, 2519, 2520; *Phacidium infestans* on pine, 1358; plant diseases, 1176d; *Plasmodiophora brassicae* on cabbage, 2869; *Plasmopara viticola*, 835, 2588, 2589; *Pseudomonas alliicola* 2911; *Pseudopeziza ribis*, 231[illegible] *Puccinia pelargonii-zonalis*, 1620; *Scirrhia acicola* on pine, 3231; *Scolecotrichum melophthorum* on cucumber, 573e; *Taphrina deformans* on peach, 2777; *Ustilago avenae* 2668; *Venturia inaequalis*, 1032c, 164[illegible] 2940e, 3128.
—, analytical methods for, 23.
—, effect of PVC on redistribution of on apple 3128; of, on biochemical processes in *Mycosphaerella pinodes* infected pea, 114[illegible] on fruit yield of cranberry, 1669; on *Fusarium oxysporum*, 3651; on yield of pea, 842b.
—, estimation of 'blocking' power of on *Plasmopara viticola*, 1400a, b.
—, toxicity of to *Chrysanthemum*, 1016.
— versus oil-Bordeaux spray, 2311.
— in combination against *Alternaria pluriseptata* on cucumber, 1167; *Corticium solani* on *Hevea* rubber, 2306; *Plasmopara viticola* 835, 2155; *Podosphaera leucotricha*, 37[illegible] *Sclerotinia fuckeliana* on vine, 2155; *Taphrina deformans* on peach, 2777; *Uncinula necator* on vine, 2155; *Venturia inaequalis*, 2263.
— analogue against *Peronospora tabacina* 2520.
— +Cu oxychloride, synergistic action of 2963.
— 80 alone and in combination against *Pseudopeziza medicaginis* on lucerne, 1639.
Zinnia elegans, beet mild yellowing virus on 181.
— —, *Oidium erysiphoides* f.sp. *zinniae* on 3459.

ram, adaptation of *Venturia inaequalis* to, 2461.
against diseases of stored fruit, 3484; *Elsinoe veneta* on raspberry, 573a; *Erysiphe polygoni* on pea, 2880; *Plasmopara viticola*, 2589; *Tilletia caries* + *T. foetida* on wheat, 3403; *Venturia inaequalis*, 2940e.
zyphus jujuba var. *inermis* witches' broom, transmission of, 2846; by stem-grafting, (?)virus causing, 236c.
MC 5, antifungal properties and constituents of, 231t.
oophthora phalloides on aphids in Poland, 1428.
[*Zoophthora*] *vomitoriae* on flies in Europe, previously named *Entomophthora vomitoriae*, 1427.
Zoysia, *Puccinia zoysiae* on, in U.S.A., 665, 1026a, b.
— *japonica*, *Corticium solani*, *Curvularia*, and *C. pallescens* on, 1286.
— —, *Fusarium* on, in U.S.A., 2453.
— —, — *oxysporum*, *F. roseum*, *F. solani*, *Griphosphaeria nivalis*, and *Helminthosporium tetramera* on, in U.S.A., 1286.
Zygorhyncus moelleri, effect of volatile metabolites from on gametophytes of *Pteridium aquilinum*, 3347.
Zythia fragariae on strawberry, 2074, *3513.